A HISTORY OF ARCHITECTURE

336—Tewksbury (Gloucester): Benedictine abbey church (now parish church) from N. E.
(From photo.)

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PREFACE

THE subject of Volume II differs from that of Volume I in that the buildings considered are generally in existence. The difficulty in the new inquiry is in the partial substitution for the original work of art, of a highly sophisticated modification of it, put into place by later workmen who were partly out of sympathy with the original designers.

It is indifferent whether those later workmen were trying in good faith and in the fashion of the nineteenth century to preserve the ancient buildings, or worked in the unconscious fashion of earlier years, replacing the supposed barbaric work by assumedly civilized design. The fifteenth century English bishop who built late Gothic windows of his own epoch into the walls of a Romanesque choir or nave was not different in kind from he who tries to restore the Romanesque design now lost and forgotten. The second, the nineteenth century archæologist, may indeed do greater mischief because he goes further in his enthusiasm. Having evolved from his own consciousness the round-arched windows which he thinks must have been there, once, he goes on to make the church a—what he thinks—consistent work of the Romanesque period.

The great Château of Pierrefonds was simply instructive to those who saw the ruins before 1865. Since the completion of the restoration, careful as it was and intelligent, in a sense, it is not now the fourteenth century castle which one sees, but Viollet-le-Duc's interesting study of what such a castle must have been. In the first case we had merely to supply, mentally, what time had destroyed. In the present condition of things we have to spend days in deducting from the building and its decoration what is clearly, and also what is probably, conjectural; and by the time that is done we have, it is to be feared, a false notion of the primitive structure implanted in us by the long familiarity with the existing pastiche.

The author received his first lesson in this great truth—the mischief of restoration—when in 1860, he saw the great Cloth Hall at Ypres undergoing restoration, and made a drawing rather carefully of the fourteenth century spandril with a shattered monster, already lowered from the scaffolding, and what lay alongside of it—the carefully cut copy of that monster, ready to hoist into the newly decorated wall. His schooling still going on when, in 1882, he watched the workmen slowly carving the great corner capital of the Venetian Ducal Palace, the huge block of Istrian stone which had been already set in the place of the split and obviously unsafe stone which had borne the sea-winds during four centuries. The photographs of the details of Reims Cathedral which appear in this history were taken from the scaffolding reared against its walls in the way of restoration in 1883, and before those scaffoldings were taken down the simpler architectural details had been denaturalized. The French restorers have always been careful of the statues in their porches, but they are less in awe of the floral sculpture in the hollow mouldings above; while the pierced and wrought parapet, the geometrical tracery of window or of panel, and even the simply sculptured crocket or finial were assumed to be fully understood by the modern workman, and the old stones were simply replaced by new ones.

The result of all this is that the historical critic must found his conclusions upon the unrestored building where possible, though admitting as good collateral evidence the restoration itself, as showing what at least one intelligent student thought the original building must have been. If this were all, the decision of the restorer might have still greater weight with all later students. Unfortunately, the ambition of the restoring architect is nearly sure to be one with that of the local community and its officials. These last-named persons are eager to see their favourite building complete, finished in detail, smooth and fair. The former, the architect, is naturally influenced by his love of a large commission, and a noble business opportunity. He has every possible inducement, except that of archæological verity, to rebuild his church, or town-hall, or palace; and as he builds he can never restrain his own feelings of what *should be* from overcoming his slowly gained knowledge of what *was*. Men differ in temperament as much in this work of restoration as in other intellectual pursuits, but it is not unfair to say that the artist who is employed to

restore a great building is more usually a man of aggressive and militant type than a patient and modest student of the past.

. . . . . .

The first volume of this work has received, from two sources, criticism of a highly suggestive kind. This refers to the alleged need of more profound inquiry as to ultimate causes. Why were the Egyptian buildings and the consequent Egyptian method of design, just what they were? And what, in the instincts of the race—what, in its political or in its social study, in its habits of life or of thought, in its religious belief—made that building art so impressive? What made it so individual in its character that it held its sway undisputed, pursuing a nearly normal evolution during forty centuries, and gave freely to innovating Greece and to dominating Rome, while yielding to them in nothing?

There is one reason for not following in the path opened by these suggestions, namely, that no one knows whither it will lead. Our business is to ask what the artist had in his mind. How he came to have it there, and in that shape, is another question, a question of metaphysics, or of ethnics. When we discuss fine art let us keep close to that which can be verified. Let us be ready to disbelieve, to ignore, to refuse the search for evasive theory. The arts of design are the result of the artistic impulse in man, of his disposition to record, to explain, what is beautiful in the world of nature, and to refine and beautify the work of man.

That is enough for the artist to know. A lifetime of study and thought will not suffice to unfold all the charm and all the mystery of that simple creed. One has a right to be suspicious of any course of thought which tends away from the artistic explanation and towards the more remote, the metaphysical explanation. Artistic beauty lies in light and shade and colour: artistic interest lies in the skilful combination of those simple elements. This is obtainable by the study of proportion, of refinement of line and curve, of direct lighting and reflection. Harmony, contrast, repetition, sequence, sunlit wall and half-seen interior, these and a thousand more direct appeals to the eye are ready for our use; they are interesting enough to spend a lifetime upon; they are noble enough to reward any sacrifice; the peoples in whom that conviction was the strongest were the best artists. The critical historian, then, will not ask too curiously whether their ethnic relations or their religious creed swayed their methods of design very notably.

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A HISTORY OF ARCHITECTURE

A HISTORY OF ARCHITECTURE

BOOK VI.—ASIA APART FROM THE MOSLEM INFLUENCE

CHAPTER I

INDIA AND SOUTH-EASTERN ASIA

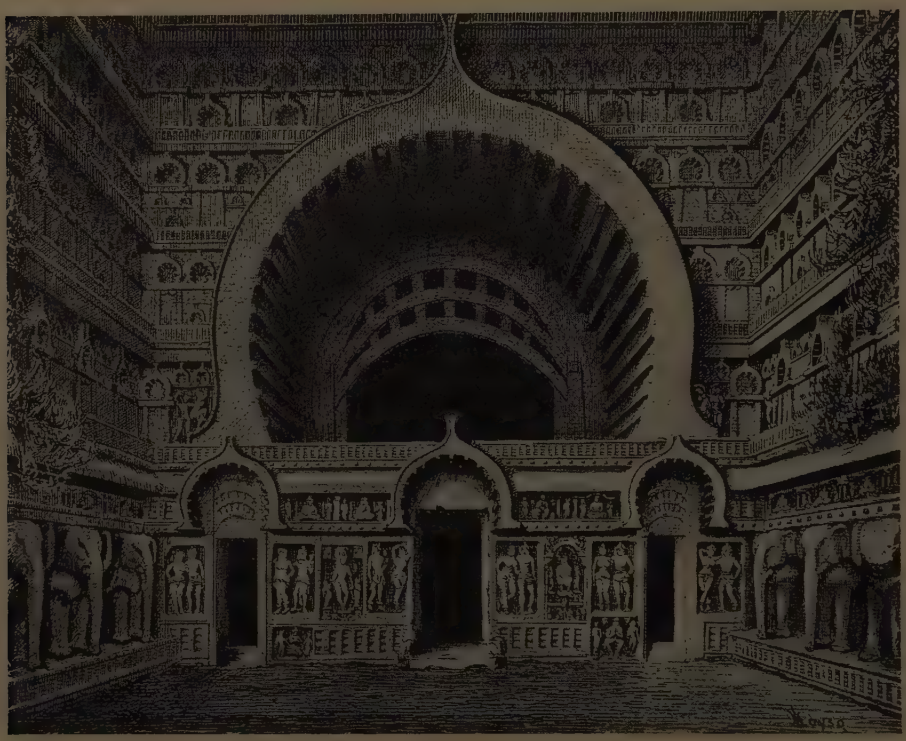
THE earliest monuments of India which demand our attention are those in which an imitation of wood-framing is preserved in cut stone. In these are seen the primitive forms which result from excavation in the natural rock; and in them the less primitive methods of the house-carpenter are copied with evident precision. The most important of these monuments are the great rock-cut temples of the early Buddhist period. The entrance to the cave-temple of Karli, 50 miles south-east of Bombay, is shown in Fig. 1.[1] The great nave to which this portal leads is 120 feet long and 44 feet wide between the supporting pillars, with about 50 feet of height. Its roof is spanned by apparent arches left from the cutting away of the solid rock; in places repaired by insertions of stone and even of wood, but always in exact imitation of woodwork, as in the triple arch seen in Fig. 1 above the blackness of the doorway. Such a method of building trusses by arched ribs of plank, each rib made up of many thicknesses bolted together side by side, and each rib stayed to its neighbours by uprights of timber, is a familiar construction in Asia. This wooden construction is shown in Fig. 2. In this way the cave-temples are a record of the earliest building processes of India.

These early cave-temples (chaitya caves) are not older than the third century B.C., but they suggest a derivation from much earlier and probably simpler hypogees, like those which exist by hundreds in hillsides of Central India and near Karli itself.

The roof of the hall at Karli is held up by octagonal pillars having elephants and human forms in the capitals: but these are not evidences

[1] Dr. Gustave Le Bon's book, from which this figure is taken, is entitled Les Monuments de l'Inde; Paris, 1893.

of a columnar system existing in ancient India; they are rather like the "pillars" in our coal-mines, left to hold up the roof. The shrine also is reserved in the living rock, as explained below. In like manner, at Ajunta, 200 miles north-east of Karli, the entrance doorway and the great window above it are a copy of woodwork, not more exact than that which we find in the tombs of Asia Minor (see Vol. I, Book II,

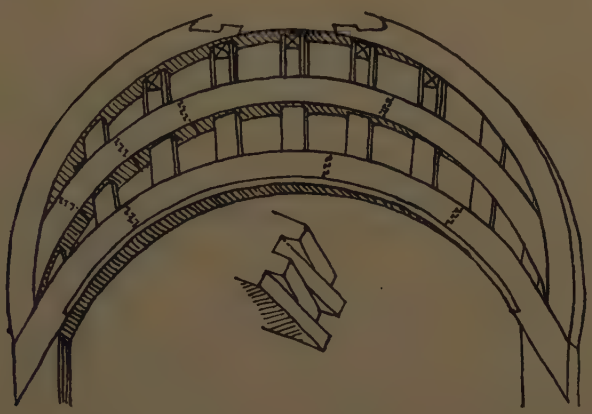


1—Portal of cave temple at Karli. (From Le Bon.)

Chaps. II and III), but representing a much more elaborate and pretentious system of wooden building.

It has been asserted that these two are the only indigenous architectural arts of India; that all Indian styles have these two origins, drawn from the land itself, while all other influences are evidently either Persian, Chinese, or, in a few cases, Occidental, from the countries of Western Asia. The imitation of wood is found in many forms and expresses a great intelligence in the use of timber among the populations of Central India in prehistoric times. In Fig. 1 the huge and heavy vault of the exterior porch, projecting more than 20 feet horizontally beyond the arch-truss (Fig. 2), is copied from wooden roofing.

The horizontal cleats are the representation of purlins, such as, in an ordinary roof, would be carried from wall to wall or from truss to truss, for the purpose of securing to them the boards which had to be bent to the curve. Even the great thickness of the projecting hood is explained by the necessity, in actual woodwork, of nailing or pinning many thicknesses of boards one upon another, in order to secure the whole together in a permanently curved form. In like manner the simplest trusses of planks, whether of curved or of straight-lined form, are imitated in stone-cutting either in solid rock or in masonry. This ancient wooden building was good and intelligent, far exceeding anything known in early Europe. Even diagonal bracing is seen existing in



2.—Theoretical reconstruction of the wooden truss copied in stone at Karli (see Fig. 1). (Drawn by E. P. C. from Choisy.)

the timber construction of the north, as at Mount Abu [2] in Rajputana. At the temple of Fatehpur Sikri,[3] in the Agra district, Northwest Provinces, there is found the little pavilion illustrated in Fig. 3, in which the whole building is a complete copy in stone of a framed structure of wood. The epistyle is shaped to resemble the overlapping and projecting ends of wooden girders, which are carried by a supercapital wrought into the form of a four-armed system of brackets to diminish the unsupported stretch of the girders, and these girders are apparently

[2] Fifty miles west of Udaipur (Oudeypore), capital of the State of Marwar (Mewar).

[3] Fatehpur Sikri. Dr. Le Bon gives a scale drawing of this pavilion which is only 13 feet square to the outside of the four pillars. He seems to be in doubt as to the epoch of the work, but as he is careful to point out how closely in this city the Moslem builders followed the ancient Hindu lines, this may retain its place as a native building. Much larger instances of the same structure are common.

braced to the uprights by diagonals which, in their elaborate sculpture, have not lost traces of their origin.

The use of timber in cantilever-construction [4] is common in modern bridges and the like, throughout the forested countries of Asia. A development of the same system of building, by laying log upon log, or stone bar upon stone bar, is probably to be noted in the India stone-

3—Mandir, or pavilion of Buddhist or Jain architecture at Fatehpur Sikri, province of Agra. (From photo.)

built towers of curved outline, as seen in Fig. 9. If you raise a pile of logs or of squared timbers, laying them alternately along and across, at right angles, you will almost inevitably diminish the horizontal measurements as you ascend.

[4] Cantilever: a constructional member intended to carry a weight far beyond, horizontally, the point of support. Thus a beam projecting from a wall or pier which holds it fast, may carry a weight at some distance from that wall or pier. A corbel is a variety of cantilever.

4—The great tope at Sanchi, from the north. (From Griffin.)

In the cave-temples the main purpose of the work is to surround and enclose a shrine, which is frequently left in the rock and shaped into a rich and varied form, or is in some cases built up from stones brought from outside. Thus in the cave-temple at Ajunta, the chaitya, or special object of veneration, is a rock-cut monument standing about 20 feet high and placed in the centre of an apse, as the ciborium above the high altar of a Christian church would be placed. The apse itself is columnar, with a semicircular end and long, straight sides. A less showy chaitya exists in the great temple at Karli, of which the entrance is shown in Fig 1.

The huge mounds of generally non-architectural character have important architectural features. Thus the great Sanchi Tope, near Bhilsa, north-east of Bhopal, in the heart of Northern India, shown in Fig. 4, is a nearly hemispherical tumulus of about 105 feet horizontal diameter, but surrounded and the earth apparently retained by a railing of stone. Much well-made, burned brick is used in the tumulus. The brick is set in mud-mortar or bitumen: that is, mortar with but little cohesive quality. The mound has been much injured by English diggers.

The use of a retaining wall to enclose and support a mound, is familiar to us in the tumuli in Asia Minor, such as those near Smyrna, and those of North Africa, known as the "tomb of the Christian," near Kolea in Algeria, and those given by Alexander Graham [5] as the tumuli of Massinissa and Juba, kings of Mauritania. The peculiarity of the Indian example is in the close imitation of wooden fencing. Fig. 5 shows the construction—stone posts into which stone rails are inserted horizontally—and a stone "hand rail" crowns the whole. The splendid gateways are of the form known in English as toran, from a Sanskrit term, which corresponds closely to the pailoo of the Chinese and the torii of Japan. The opinion of archæologists is tolerably uniform, that the gateways of this form are of Chinese origin, and their introduction of unknown antiquity. One of these is shown in Fig. 6. It is covered with sculpture, of which that on the right-hand upright shows a six-storied façade with four columns and three openings in each story. The left-hand pillar is covered with scenes of devotion and Buddhist legend. The lowest panel represents Gautama (afterward the Buddha) leaving the palace at Kapilavasthu.

[5] Roman Africa, an Outline of the History of Roman Occupation of North Africa, by Alexander Graham.

In this way the whole gateway, front and rear, and in all its parts, is covered with elaborate sculpture in high relief, no part of which can be later than the second century A.D. Each one of the panels of the left-hand post is about four feet high.

The epochs fixed by English archæologists for this building are, for the tumulus itself, the fourth or fifth century B.C.; for the railing which surrounds the mound, about the middle of the third century B.C.; and for each toran a time somewhat later, from 100 B.C. to 100 A.D. The whole structure was erected under Buddhist influences.[6] The Sanchi topes are in the district named from the

5.—Diagram of the stone railing surrounding the Sanchi Tope (Fig. 4). (From Choisy.)

largest town, Bhilsa (lat. 23° 39′ N., long. 77° 50′ E.). They are clustered in small groups or stand singly, at Sonari, Satdhara, where there is one tope 101 feet in diameter, at Bhojpur, and at Andher. None of these are more than fifteen miles from a common centre. A thorough book has been devoted to the examination of these topes,[7] in the preparation for which, however, much injury was done to the monuments themselves.

[6] Such a tumulus as this, containing in its heart no important architectural structure nor any sacred relics, is known as a stupa. A somewhat similar structure arranged to contain a temple in its body, or even secret chambers to hold relics, is called a dagoba: of which word the familiar "pagoda" is probably a corruption.

[7] The Bhilsa Topes (1854). General Alexander Cunningham, who died in 1893, was assisted in the work by Colonel Maisey. See Dictionary of National Biography, s. v. Cunningham.

6—Eastern toran of the tope (Fig. 4). (From Griffin.)

A very large stupa at Bharhut in Bundelkund (about lat. 24°, long. 81°) has been almost entirely removed, apparently by the natives who have used its materials, but a few important sculptures remain, either on the spot or in the great cities of India, notably Calcutta, whither they have been removed by collectors.

A similar monument, without notable interior and wholly a decorative and memorial object, is that of Sarnath near the holy city, Benares. It is thought to date from the sixth century A.D. The tower-like mass is still about 110 feet high, having lost its coronal, or tee, or whatever decorative feature finished the upright shaft. This tower rested upon an octagonal base about 40 feet high, which was built of stone and adorned with niches once containing statues, and with very elaborate and delicate sculpture, both floral and in formal patterns. In this, as in all Indian building with cut stone, the joints are dry, as in Greek and Greco-Roman work.

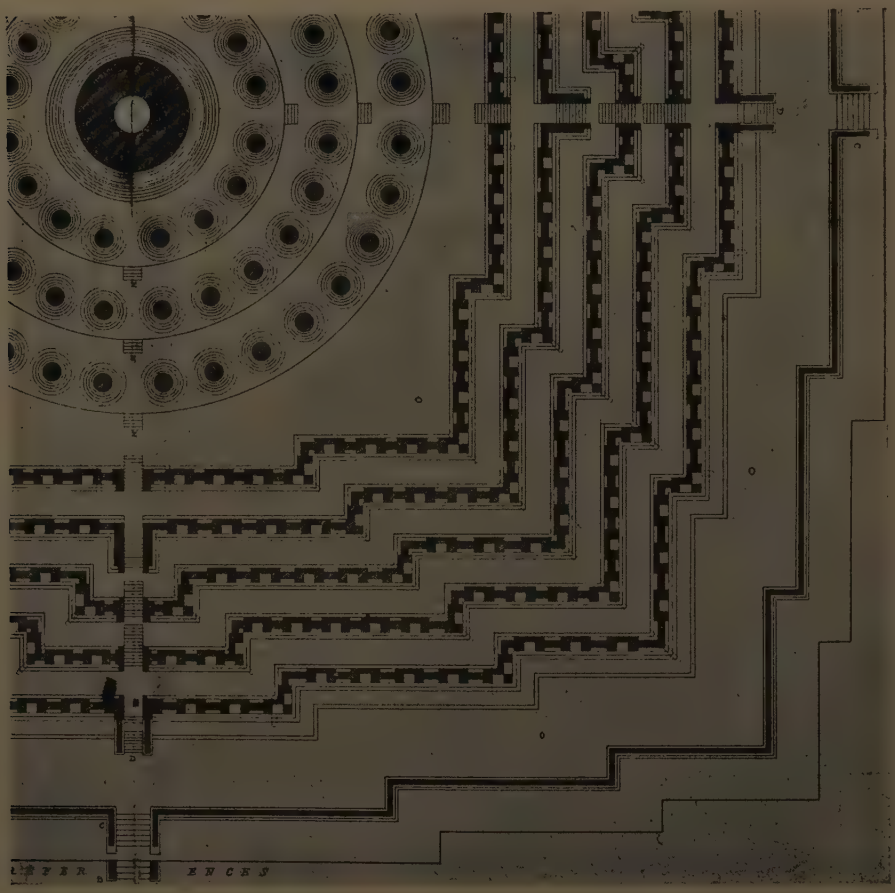
In the independent kingdom of Nepal, at the far north of India, are two large stupas, the one at Buddnat, the other at Sambunat. Each is given in the photographs of Le Bon,[8] is of generally hemispherical shape, like the tope at Sanchi, and is built of fired brick with some use of cut stone. Their dimensions are great—about 300 feet high in each case.

The general similarity is evident, between these purely monumental masses, adorned with admirable sculpture but not otherwise the subject of regulated decorative design, and the great temple-towers which were produced during a thousand years in India and which form its most striking features. The princes and peoples of Asia, at all periods, have been disposed to produce monuments whose sole purpose is striking and brilliant effect; and this tendency has preserved and increased the power of those races to make abstract designs—a power hardly existing in Europe. Nothing is more feeble than the attempts of European designers, especially in modern times, to build sepulchral monuments and similar memorial and decorative masses in which the design is not controlled nor suggested by utility. On the other hand, it is in these that Asia is apt to excel.

The topes of the countries east and south-east of India proper, Farther India, Malaysia, and the great islands of the Indian Ocean are as exclusively monumental as the tope of Sanchi shown in Fig. 4. The forest region of Cambodia is full of the marvellous stone monu-

[8] Op. cit., plates 364, 367, 368.

ments called by the French, who have studied them and have brought to the Louvre many rich fragments of sculpture, Khmer remains; the ancient race which produced them having received the name Khmer from the archæologists. The stupa called Angkor Wat is without general interior, without halls, passages, or communicating apartments, although its platform is 600 feet long and is nearly covered



7—Partial plan of the Boro Buddor, Java, the central point of the whole being in the white circle. (From Raffles.)

by the massive buildings which rise from it in the form of a vast pyramid. This peculiarity comes of the attempt to make an exclusively external appeal to the visitor. Separate shrines, canopies, shelters for statues or for relics there are in abundance, and each of these may be approached and even entered, but they are small, like isolated houses on a hillside; and the huge composition rises slowly, step

above step, toward a central tower whose original height is variously estimated at from 250 to even 400 feet. The parts are large and yet are dwarfed by the extent of the whole mass. Thus the gateways of entrance to the lower platform are built of such size that an elephant with his howdah may enter.

In Java the famous stupa called the Boro Buddor is nearly as large in plan, but is not so high, and is not so absolutely lost in a tangled forest of tropical luxuriance, and dangerous from malaria, savage beasts, and poisonous serpents. It was rather thoroughly

8—Temple at Pagan, Burmah. (From photo.)

studied by the draughtsmen employed by the former English governor, Sir Stamford Raffles.[9] Fig. 7 gives a quarter of the plan, and this shows the series of steps, each of which is a terrace about 12 feet wide and supports a great number of small shrines facing outward, and each intended to contain a seated statue. The round terraces in the centre support much larger buildings, dome-shaped shrines, each

[9] Java was occupied by the British during the Napoleonic wars, and receded to the Netherlands, 1816. Raffles's book was published in 1817 and still remains the fullest account of the island and its contents.

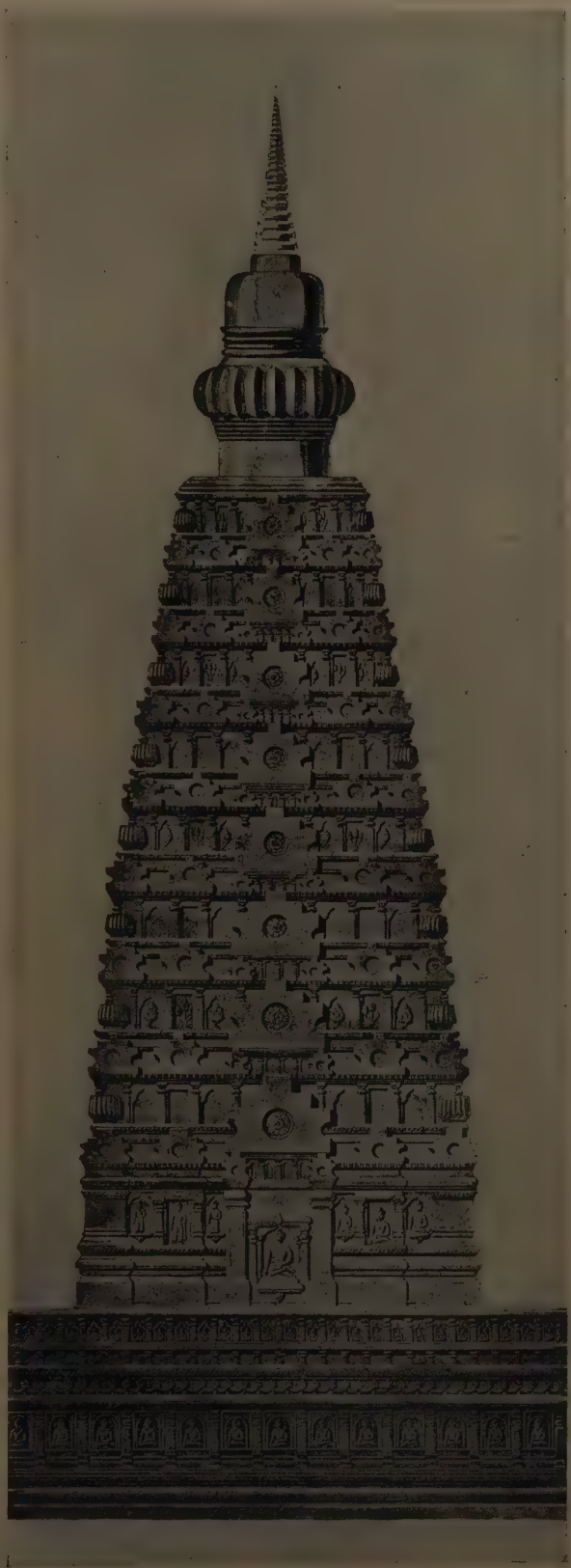
9—Tower of Buddha Gaya, from the east. (From Mitra.)

topped by a low spire and each about 25 feet high. The central structure seems to be wholly lost, and only the deep well in the middle is certainly identified.

The general form of these lofty and most aspiring structures, with their upward pointing spires, and the steady rise from the platform, by a hollow curve, to a sharp spire two or three hundred feet aloft, is repeated in more utilitarian buildings. At Pagan in Burmah are very splendid temples having great halls within and beneath their monumental outsides. Fig. 8 is the temple called that of Thai-pin-Yu (the omniscient), which is about 200 feet square and much more than 200 feet high.

The desire and the power to produce costly and effective pieces of ornamental design which are nothing else, is seen in the notable iron column of Asoka, so called, standing near Dehli (Delhi). That

city is known as the home of important Mohammedan structures of the thirteenth and later centuries, which are treated in Book VIII, and the iron pillar itself stands in the court of that great mosque which is called the Kutub. The pillar, however, is known, from the inscriptions which it bears, to be of the third or fourth century A.D. It is about 24 feet high, the shaft generally plain and tapering, but finished at top with a coronal or capital somewhat in the Persian taste, reminding the student of the complex capitals at Persepolis (see Vol. I, Fig. 59). The analysis of small pieces has shown the material to be malleable iron without perceptible impurity, and it is probable that it supported the figure of a Hindu divinity.



10—Southern face of the Buddha Gaya tower, as conjecturally restored (compare Fig. 9). (From Mitra).

At Buddha Gaya in Bengal (lat. 24° 42′, long. 85° 24′) stand the remains of a very ancient Buddhist shrine identified with the foundation of the religion and with the personal teaching of Gautama Buddha himself. There is no doubt that the great tower was built in the fifth century B.C., but restored or perhaps rebuilt, and certainly with inferior materials, about 1300 A.D. The temple has been of late the subject of very violent reconstruction which has destroyed especially all traces of the original rail and sculptured parapet which enclose the temple. The great tower is shown in Fig. 9 from its eastern side. An elaborate restoration, partly conjectural, has been made in a drawing (Fig. 10), but with obvious errors which are pointed out by the author of the careful book from which it is copied. In spite of these errors the restoration may be studied as approximately correct in the main outlines of the building and especially with regard to the crowning member, which has in fact lost its characteristic form. This eastern face of the tower has the entrance doorway to the very small sacred place within; and above the doorway of entrance is a triangular window opening, the sides formed by the projecting corbelled courses of the masonry. A similar window occurs in the ancient temple which the author of the book "Buddha Gaya" gives, as standing at Konch, a village south-west of Buddha Gaya. This temple is given in Fig. 11, because illustrating the structure of these lofty tower-like stupas, but it is not to be understood as having a projecting rounded outline, as the photograph in its original design indicates. That bulbous outline is the result of more complete ruin in the lower story than above, the mass of solid masonry holding together in spite of this undercutting of its base.

Nothing that can be discovered on the site of Buddha Gaya will suffice to explain the original arrangement of the temple, but Dr. Mitra copies from the great Indian Archæological Surveys by General Cunningham and others, at least two different plans of the great tower and its immediate appendages—plans which differ widely one from another and which yet agree in showing the tower rising from a platform which is large enough to include also the famous tree under which the Buddha received Enlightenment and which remained still recognizable until near the close of the nineteenth century. This platform was enclosed by a remarkable wall adorned with arched openings in panels, which panels are divided by engaged pillars. This retaining wall is slightly indicated in Fig. 10, but the large details of it given in Mitra's

book contradict at once all assertions of a very early date for it. It is of decadent style, and with its sculpture is less to be regarded than most of the architectural remains with which we have to deal.

Persian influence in India is seen chiefly in the abundant and skilful ornamentation applied to large surfaces of wall, exterior and interior. This ultra-Asiatic demand for surface-decoration was encouraged by the familiar piling up of huge tower-like masses with but small and unimportant interior chambers. These, as seen in Figs.

11—Tower of the temple at Konch. (From Mitra.)

9, 10, and 11, show that a feeling for monolithic work remained from the days of rock-cut caves. The Indian architect was not prompted, as an Egyptian or a Greek would have been, to show his uprights and his horizontals, to confess the way in which his masonry had been put together; and he did not know the use of the constructional arch. The first impulse of the student trained in European work, especially in that of the European Middle Ages, is to reject such design as that of these Indian dagobas, as having no constructional interest. The only constructional influence evident in such a design is that of the horizontal

courses of stone: as seen more clearly in some of the later towers, such as the great temple of the eleventh century A.D., at Bhuvaneshwar in Orissa. This tower, like that at Buddha Gaya (Fig. 9), is covered thick with sculptured forms, producing a pattern whose separate units are hardly traceable without close examination: but the sculpture is far more minute, and natural forms have been studied in its design.

From the sixth century A.D. Buddhism grew weaker in the Indian peninsula, and what is called the neo-Brahmanic period began, and with that period appear such sculptured towers as those of the temple of Raja Rani at Bhuvaneshwar. The sculptured details of this temple are shown on a large scale in Fig. 12. The courses of

12—Detail of temple of Raja Rani at Bhuvaneshwar in Orissa. (From Le Bon.)

stone in both these examples are marked with more than European decision, projecting far beyond their joints in what would be in Europe an almost impossible "rustication"; and it is this singularly emphasized horizontal subdivision which has suggested to some writers a possible origin of it in a piled-up mass of timbers, the child's pile of

corn-cobs. On the other hand the vertical projecting masses are carved with significant compositions, human and animal forms alternating with conventional patterns of great decorative effect, and these vertical subdivisions, also, are unconnected with any interior arrangement, or with necessary construction. The artist has felt interested, in the one case, in strong vertical lines of light and shade; in another he has been indifferent to these as compared with the effectiveness of horizontality. The origin of these peculiarities of design cannot be

13—View of the temple and enclosure at Srirangam, with gateway towers, the great Vimana on the right, and many dwellings. (From photo.)

decided until the architectural character of Indian buildings shall have been studied with some such care as has been given to the arts of Egypt.

It is to that Egyptian art that the general plan of the Indian temple must be compared. In either case, the ground, enclosed by high walls, is relatively very large, and for the most part open and unoccupied, as shown in Book I. In either case the gateways are of great splendour, towering high above the walls of the enclosure; and these are chosen to receive the richest sculptures.

The more usual scheme in India is a series of bounding walls, each successive enclosure perhaps representing a different period in the temple's history; the oldest shrine and its enclosures remaining inside, and the last to be reached. In the island of Srirangam (Seringham) at Trichinapalli (Trichinopoly) in Madras, the arrangement is ex-

tremely complicated. Fig. 13 is a view of this sacred enclosure, showing seven larger and several smaller gateway-towers (Gopuras) and the great Vimana in the distance. At another sacred place, such as Tanjur or Vijianuggur, open porticos would play a part in the architectural distribution: but nothing important in the way of columnar building appears at Srirangam.

At an early date the decorative building of the Buddhist king, Asoka (260–223 B.C.), in the north of India, included large columns, and these are sometimes of approximately classical form, suggesting a late-Greek origin, and recalling the intercourse between Asoka and Antiochus the Great, about 256 B.C. Those columns are often used as mere ornaments, with no superincumbent masses. At a later time there was developed in the south a columnar architecture of more originality and of great importance: its origin seeming to be rather the rock-cut colonnades of the hypogee temples, as at Karli and

14—The Volkondar or Pleasure Hall at Vijianuggur, now Bijanagar. (From photo.)

Ajunta, described above, than any foreign influence. The demand, in a country of steady warmth, for large open halls, made the roofed space with no enclosure except a colonnade a most welcome form of building. The great temple at Gwalior, Rajputana (lat. 26° 13′ N., long. 78° 12′ E.), thought to be of the eighth century A.D., shows in its exterior hardly any effect, architecturally speaking, except that produced by the alternation of sun-lighted columns with sombre interiors; the columns themselves being elaborately wrought. It is to

be observed in this and in other similar cases that the entablatures, if the word may be applied to those strongly marked coursed structures which rest upon the columns, are plain, while the columns themselves are broken up into somewhat elaborate alternations of vertical and horizontal adornment. This disposition to decorate the supporting member is strongly characteristic of Indian art of all periods. Fig.

15—Basement story of ruined tower at Vijianuggur. (From photo.)

14 is a part of the ruined temple at Vijianuggur (Vizianagar or Vidyanagar), near Hampi, in the province of Madras, on the River Tungadhadra. This building is probably of the fifteenth century, as the temples at Vijianuggur seem to have been not ancient at the time of their destruction by the Moslem conquerors about 1510. It is greatly to be desired that careful analysis and comparison should explain the evolution of such columnar architecture as this. The system of columnar design as practised by the skilled workmen of the south of India will not be understood until many examples of it have been dated and minutely compared.

Another pavilion at Vijianuggur exemplifies the natural development of such a pillared architecture as this. When a building is evidently a piece of costly splendour such as results from the labour of great numbers of workmen not employed in directly productive industry, the tendency toward superabundant ornament is seen wherever society is so far developed that sculpture has become easy and ornamentation has been raised to a system. In the building shown in Fig. 15 the pillars are about 10 feet high. Each is cut, nominally, from one block of granite, but it may be assumed that there are many insertions and separate pieces, such as the colonnettes which surround and adorn each pillar.

The pillared porticos of the far south are often associated, both for architectural effect and for the pleasure of the dweller, with huge tanks or artificial lakes. These offer broad sheets of smooth water, in which are mirrored the carefully built retaining walls, stairs of approach, water-gates, and pillared halls, all combined with palm trees and other abundant tropical foliage. The scheme of composition is seen to have included those reversed copies of the elaborate architecture.

Fig. 16 shows a more pretentious pavilion, forming part of the great temple at Tanjur (Tanjore) in the far south of India, in a region of steady heat. The great vimana is seen on the left, and this occupies about half of a raised platform 90 × 180 feet, the other half being covered in by the portico to which the flight of sixteen steps ascends. On the right of the picture and in front of this pavilion is the smaller and more open pavilion which serves as a canopy for the great stone figure of the bull Nundi, which figure can be dimly seen between the columns. This roofed hall is not unlike the smaller hall at Vijianuggur (Fig. 15) in the treatment of its columns, but it has the great additional advantage of a nave or central passage crowned up higher than the side porticos, and the pillars are carved with lions at the top, where the corbelling begins to carry the nave roof. This sculpture is applied to the bearing member, the pillar, in a style that reminds the student of Persian design. Fig. 17 shows the great vimana from the north-east, and the spectator is standing upon the great platform and is looking nearly in the opposite direction to that taken in Fig. 16. The high basement of the tower is of what is called granite, a hard rock taking a high polish. This basement rises to a height of about 60 feet, the two stories which compose it being nearly identical in design.

16—Great temple at Tanjur, from S. W. (From photo.)

From this rises a pyramid which is made up chiefly of terra cotta in many parts. The great crown of this vimana is better seen, though on a small scale, in Fig. 16, where the greater distance enables its outline to come distinct against the sky. The tradition of the place is that this same crown is cut in one block of hard stone, but there is no verification of this statement. The total height from the ground outside to the top, including the elevation of the platform, is about 200 feet.

The natural evolution of a style in which the supporting member is the most richly adorned part of the building, is seen in such a colonnade as that at Vellur (Vellore), in a few pillars of this porch, as shown in Fig. 18. Those of the outer row carry elaborate diagonal braces, corbels, and curved brackets, all closely reminiscent of wooden construction; and the upright itself is concealed from without by a series of gigantic and high-wrought sculptures, mounted men on rearing horses, crowned, armed, and harnessed in royal fashion, and accompanied by throngs of followers, or captives, or monstrous beasts. A similar decoration, made up of fully realized groups of highest possible relief combined with statuary, is found in a wonderful temple in the island of Srirangam (Seringham) near Trichinapalli. At Madras is a similar exaggerated and violent use of figure sculpture, always having, as it seems, a directly religious significance. All these examples are in southern Madras, in a completely tropical region.

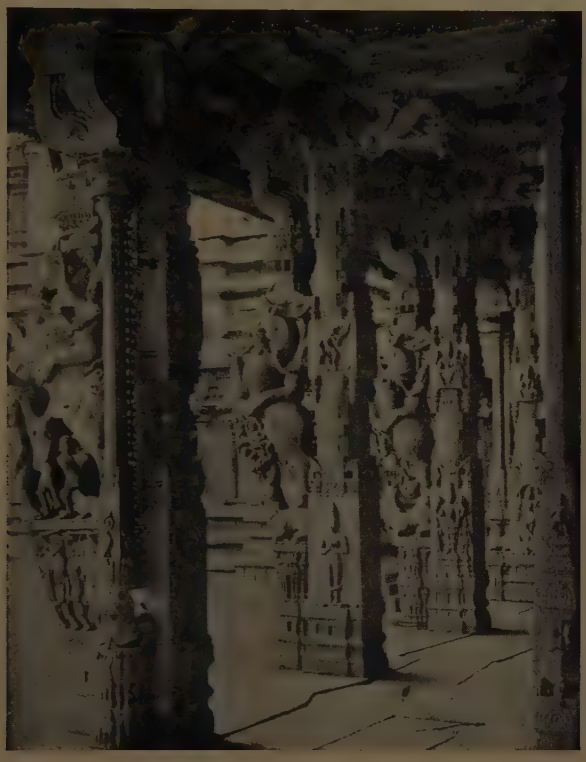
The northern and north-western parts of India are more especially the home of Aryan peoples, Rajputs, Brahmans, and Mahratta Hindus. There has been among these races more disposition to build interiors which are familiar in general character (though not in detail) to Europeans.

The rock-cut temple of Ellora (Elura) in the northern part of the peninsula [10] is not a cave, like the temples at Karli and Ajunta, but a solid upstanding palace-like edifice two stories high, left in the middle of a cleared space from which the native rock has been removed. Isolated pillars about 130 feet high, 30 feet square at their base, and carved in imitation of coursed masonry, flank this seeming palace two stories high, furnished with pilasters and corbels, which support overhanging cornices much sculptured with human and animal subject. This building, called the Kailas, is about 50 by 70 feet in horizontal

[10] About latitude 21° north.

17—Vimana of great temple at Tanjur, from N. E.; about 190 feet high (see Fig. 16). (From photo.)

dimensions. There are chambers within, but also large parts of the apparent building are solid, perhaps as representing an incomplete design. The caves of Ellora contain many rock-cut remains of great interest, some of them in the character of chaitya caves. This work is cut in a rock spoken of as granite, though it does not appear whether this material is as hard as the granite of the western builders. The work is thought to be of the ninth and tenth centuries A.D.



18—Portico at Vellur, Madras. (From photo.)

In the eleventh century A.D. were built the marble temples of Mount Abu in the Rajput country. In one of these temples is a remarkable sculptured cupola adorned with human figures carved upon sloping spurs of stone, which, radiating from the centre of the dome, seem to support its whole mass. This cupola is supported upon columns so richly wrought in pierced work that they have the appearance of carvings in ivory or some similar material of perfectly compact structure. Still more elaborate columns are those of the temple of Vreypal, also on Mount Abu; but these are all of an inner sanctuary,

almost inaccessible to visitors, and the work is of the nature of a costly sacrifice to the divinity. The columns, however, do their work; there is stone enough left in the heart of each pillar to support the weight of a stone ceiling, and on this account they are still works of architectural art.

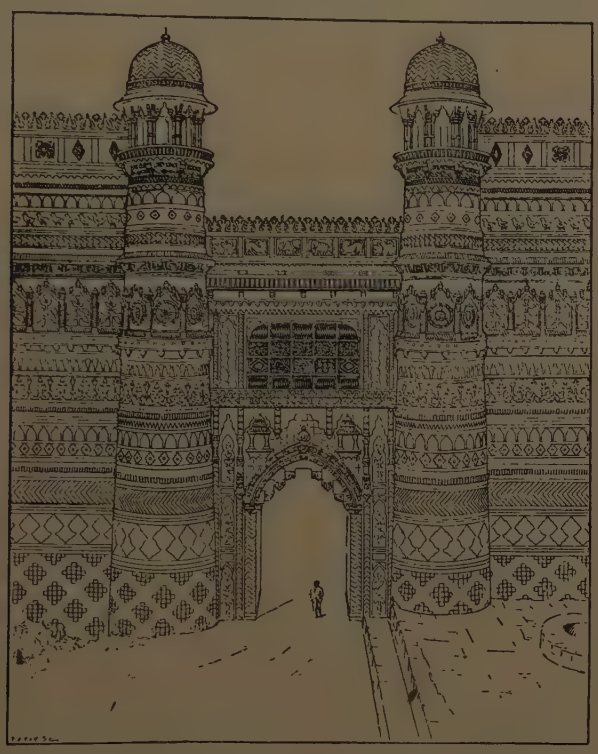
At Nagda, a ruined city in Rajputana, is a cupola, of which the sculptured figures are of great technical merit. No examination yet made suffices to fix the extent or degree of monolithic work in these

19—Great palace at Gwalior. (From Griffin.)

remarkable domes of slight concavity, and loaded with sculpture. Their dates are not determined by inscriptions; they can only be classed as of the ninth or tenth century A.D.

Stone-built structures are all that we possess of this great period of Indian art, that identified with the Buddhists and Jainites and limited by the dates 300 B.C. and 1000 A.D. There are traces, however, of admirable architecture in enamelled brick, hard to explain perfectly and as yet impossible to date, but which are yet ap-

parently of the period considered above. The subject of such decoration as this can only be touched upon here, for the examples which we must study are of later times. The fortress-palace at Gwalior was undoubtedly built in the sixteenth century. Its general aspect is given in Fig. 19, and it is an excellent specimen of the great stone fortresses of the native princes, unaffected by the strong Mohammedan influence of the large cities in the north of India. Within its walls are



20—Proposed restoration of walling in colored enamelled brick; palace gateway at Gwalior. (From Le Bon.)

several distinct residences, one of which, the Man Mandir, is famous for its decoration of painted pottery. Fig. 20 is a partial restoration of the system of colour decoration accompanying the great gateway of the palace, as studied by Dr. Le Bon.

The later developments of Indian building, with the Moslem styles introduced at the time of the conquest, and resulting from Moslem rule, are treated in Book VIII.

CHAPTER II

THE CHINESE EMPIRE

SO far as our knowledge of her history goes, China has been, since the founding of her ancient civilization, a land of small proprietors without a wealthy aristocracy, with little sign of wealthier classes interposed between the all-powerful monarch and the people; so that even the provincial governments and magistrates are appointees—office-holders without any special claim to other than administrative rank. Nor has there been a powerful priestly class, with sense of continuity and the spirit of acquisition. The spirit of the people has been, as far as history can guide us, eminently practical. The ancient ancestral worship involved no need of great temples, and the philosophical morality which stands for religion with the more educated classes is not a religion of ceremonial. For these and other reasons, there seems not to have grown up in China any demand for buildings of permanent importance. Even the imperial court under the different dynasties seems never to have undertaken the erection of public buildings which would endure. Even the imperial palaces, except one of very recent times, are, in accordance with Asiatic tradition, made up of small pavilions standing in a park surrounded by a strong wall, and those small buildings are very rarely of any strong and significant architectural character. Only a few temples have towers of cut stone of such dignity and elaborateness of structure that they secure the admiration of travellers.

The conclusion to which students have been brought is, then, that there is no trace of a great school of architecture in China; but this belief, which was already held under protest twenty years ago, has become almost impossible to hold to-day. From what we know of the capacity of the Chinese for art-production, we are compelled to infer that there is, or has been, a Chinese architecture. When writers

on the arts of China were able to state in grave treatises that the Chinese were literary rather than artistic, that their fine art was mere adorning of toys, and the like, then it could be accepted as true that there was no Chinese architecture to be named with that of India. Now, however, we know that there was a great school of painting in China as early as the earliest painting of Christian Europe, and thereafter a succession of schools of varied merit and differing quality, Buddhist and non-Buddhist. There is no distinction, among peoples of truly artistic feeling, between major and minor arts—arts of expression and arts of decoration: and the bronzes and the drawings of landscape and incident which we have, now that we have studied them modestly for a quarter-century, point to a very high and pure artistic civilization at a time when Constantinople was the only centre of literary and artistic intelligence in Europe. Japan has preserved her records, and has never ceased to assert that the noble arts of the Shinto and the Buddhist schools in Japan are alike of Chinese origin. "The religion of India and the learning of China" are, indeed, the strength of Asia, but it is by way of China that religion and the fine arts that attend upon it have come to the island empire, on many occasions, during 2,000 years. And how is it, then, that no traces of an architectural past are found in the great continental lands, the valleys of the Hwang-Ho and the Yang-tse-kiang?

War, foreign conquest, destruction, may account for the ruin of cities and palaces, but their vestiges must remain. The great cities of the Han dynasty, before the Christian era, and those of later Chinese rulers, like the Mings, in the intervals between Tartar invasions, must have left their traces. The explorations which now (spring of 1907) are going on in more western Asiatic lands, will be undertaken in the Chinese Empire: they will even be fruitful in purely artistic discovery, and a new chapter of architectural history may be written.

Of late years many western travellers, having some mission connected with railways or other business enterprises, have been allowed to ascend the great rivers, and to journey on horseback from city to city; and those travellers have brought back from China innumerable photographs. Some of these are to be found in the published books named below.[11] From these we may infer how vain is the belief that

[11] A Yankee on the Yangtze, by William Edgar Geil; New York. The Chinaman at Home, E. J. Hardy; London. The Real Chinaman, Chester Holcombe; New York. China and the Allies, A. Henry Savage-Landor; New York. Through the Yangtse Gorges, Archi-

the land is without architecture; but that is all. No one has yet brought us ground-plans, measurements, or an account of the materials employed.

Among the Chinese the roof has always been the prominent feature. The remarkable hollow curve given to the Chinese roofs has attracted the attention of every one. It is capable of the greatest beauty; for nowhere about a building can the subtleties of curvature be seen more readily than in these broad slopes turned toward the sky and strongly lighted. The primary cause of this curvature is probably constructional, and has to do with the carrying out of a plate or horizontal gutter-piece beyond the foot of the main rafters, as seen in Fig. 30. The roof construction itself is not scientific in the European sense; it is not an assemblage of triangles, but, like Greek carpentry and nearly all that of antiquity, is the result of verticals and horizontals acting as posts and ties. The frequently cited resemblance of these roofs to the Tartar tent, and the inference that there is here a deliberate imitation of its soft curves, are naturally disregarded by students of the building art. There still remains, however, our ignorance as to the true origin of the Chinese people, the possibility that they are of a nomad and tent-dwelling race, and that reminiscences of a roof which was not firm and straight-lined may have mingled with their earliest thoughts of solid building. Moreover, the Chinese were the first people to use the two-pitched roof in common building. Roofs like those of modern Europe fill the land, and have been in use for many centuries. The curved form

21—Pagoda called Wen Sing Ta, at Siang Yin. (From photo. by W. B. P.)

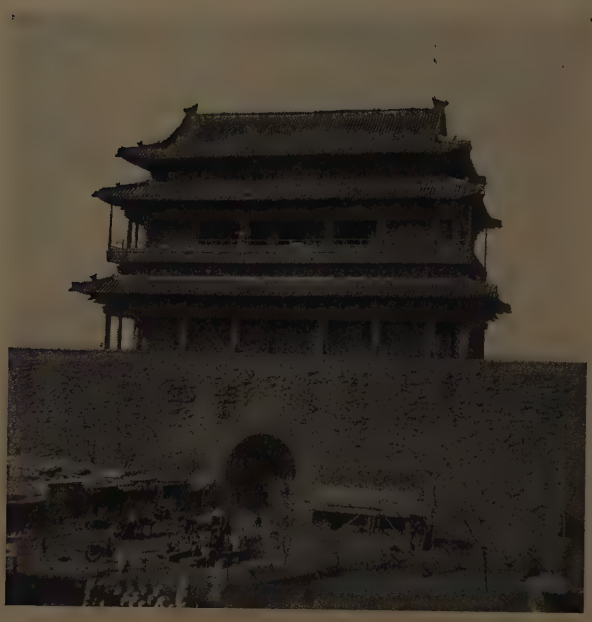
bald J. Little; London. Through Hidden Shenshi, Francis H. Nichols; New York. The Peoples and Politics of the Far East, Henry Norman; New York. An American Engineer in China, Wm. Barclay Parsons; New York. Even books presumably anti-Chinese in feeling, and written in a mood of protest against Chinese traditions, beliefs, customs and aspirations, are useful to the student because of the snap-shot photographs they offer.

is of religious and traditional association, and there is no difficulty in its use, where the framing-triangle is as completely unknown as it was to the Greeks. When you build with slender uprights, held together by slender bars, those cross-bars may as well slope like rafters

22—Pagoda near Wu Chang. (From photo. by W. B. P.)

as lie strictly horizontal (see Fig. 25)—may as well be curved as straight, the curve being easily constructed without loss of rigidity.

These curved roofs, covered with earthenware tiles, or in the simpler buildings by thatch or shingles, are made still more important by a practice of raising one roof above another, at least in appearance, and continuing this system of alternate wall and projecting roof-eaves, even to a considerable height. The appearance of this system in many buildings is nearly that of a tower, with pent-house roofs like those of a veranda surrounding it at different levels; but



23—Gateway tower on city wall, Peking. (From photo. by W. B. P.)

24—The Peking tower seen from the wall (see Fig. 23). (From photo. by W. B. P.)

the actual structure is often different. Very often the roofs are carried through, each roof complete in itself, or complete except for the very small central opening, a kind of well by means of which stairs mount from story to story. This system is seen in full development in the Japanese wooden towers, as treated in the next chapter, but it is still traceable in the masonry temple-towers of China. Fig. 21 shows the tower called Wen Sing Ta, or "Star of Literature," at Siang Yin. Fig. 22 shows a larger one at Wu Chang, opposite the great city of Hankow, on the Yangtze River. In this the roofs have become decorative features, alternating with sill-courses, and all the thirteen cornice-like members supported by brackets resting on corbels. Figs. 23 and 24 show one of the towers on the city wall of Peking. The

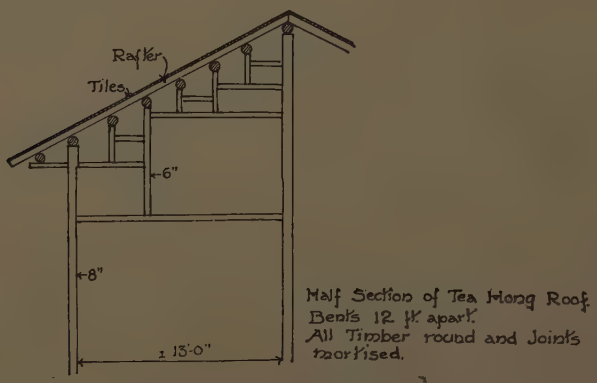
25—Framed construction with masonry filling. (From photo. by W. B. P.)

walls of the tower are of masonry, but the galleries which enclose the inner chambers are of timber, and it is these galleries which carry the projecting roofs.

These roofs, and the timber building in general of the Far East, are considered more fully in the next chapter; but the special character of Chinese wood-framing may be exemplified by the simple structure (Fig. 25). In this instance the whole one-story house has been built with a frame of round sticks, and work has been begun toward the enclosing of the vertical sides by walls of cohesive masonry—by some process like the solid clay building of Lower Egypt in the fortieth century B.C. and the mud-walling and pisé of later times.[12] Here, as in the more elaborate roofs, the uprights carry horizontals, and

[12] This photograph and others have been used by the maker, Mr. Parsons, in illustration of his book, An American Engineer in China (N. Y., 1900).

these again minor uprights, each horizontal bar or beam serving as a lintel, to carry weight laid upon it, instead of being a tie, as almost



26—Framed construction with round timbers: the roof of a Tea-Hong.
(From drawing by W. B. P.)

universally in modern European carpentry. The pressures are well distributed, the horizontals being loaded near their points of support, but it is evident that it has never occurred to these builders to use a diagonal brace or strut. The frequent use of bamboo, giving a light

27—Interior of temple associated with the Ming tombs, near Peking.
(From photo. by W. B. P.)

and hollow bar of great rigidity, has helped to perpetuate this system in the lighter works of civil architecture.

Fig. 26 is a diagram of construction in an ordinary business building. The walls of such a house may be entirely of fired brick, in

which case they are built wholly with large air chambers: or may be of wooden frame with walls of solid mud filling like pisé, as in Fig. 25; or, finally, of wooden frame with lathing made by the weaving in of light and flexible stuff—bamboo or the like, which is then thickly plastered. The roof construction as shown in Fig. 26 agrees in all respects with the photograph (Fig. 25), except that in Fig. 26 the ridge-pole at the peak of the roof is carried directly from the ground by a row of unbroken posts. This would become necessary as soon

28—Hall of the Classics, Peking; the veranda roof supported by a truss made up of two horizontal plates connected by uprights. (From photo. by W. B. P.)

as the roof was made heavy. In the diagram (Fig. 26) all the timbers are round, and the joints are mortised in a way closely similar to that used in the West, and the trusses, of which one only is shown in the diagram, are 12 feet apart.

The use of heavy timber is partly explained by Fig. 27, in which is shown the temple built among the tombs of the Ming dynasty[13] near

[13] These tombs are ascribed to the Emperor Yung Loh (1403–1425 A.D.). The date of the temple does not appear, but it may well be of the same period. With reference to the use of wood as principal material, the still existing temples of the Japanese are the best studies, as shown in the next chapter. The reader is reminded that, during the studies

Peking. Solid round pillars carry girders which are adjusted to them by cutting away the wood of the posts, either for mortises, or for deep sockets at the head of the pillars. In Fig. 28, again, the framing of a veranda is as simple as that done in the United States; nor is it very different in character, for the double plate with uprights between the upper and lower chords is good building, for small spans; and the corbel-like angle-pieces are well adjusted, both for stiffness and effect. A timber pai-loo near Peking is given in Fig. 29 to explain still further this use of timber, as a solid and heavy material, to be used for post-and-beam building, without elaboration of framing.

The frequent use of outer galleries, already alluded to, is explained by the custom of doubling the uprights when there are no diagonal

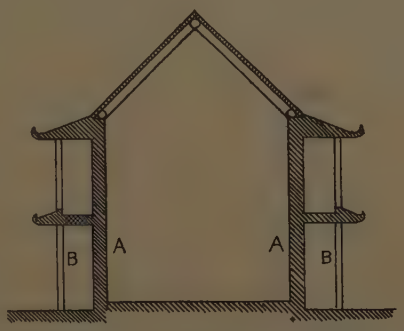
29—Timber Pai-Loo, near Peking. (From photo. by W. B. P.)

braces. Thus in Fig. 30, *A* is the masonry wall as in Figs. 23 and 24, or one part of a wooden frame replacing that wall; *B* is a second and outer post, whether serving as a veranda-post or as part of another continuous wall, and the two are braced together, as if to form one framed upright.

The hollow curves of the roofs are probably to be explained in this way. As the often-urged resemblance to the shape of a tent ap-

made of fire-proofing, in the United States and elsewhere, between 1875 and 1900, it was maintained that no pillar except one of brick masonry could be as durable and could resist fire as long as a wooden post shaped from a single tree-trunk, either solid, or with a relatively small hole bored through it, as with a pump auger, for facility of seasoning. The author has followed this system in more than one instance where considerable weight was to be carried. In the matter of permanence, this construction leaves nothing to be desired, if no unusual dampness is to be feared.

pears inadequate, a more probable explanation is this, of a steeper, double-pitched roof to cover the central building, with pent-house roofs of lesser steepness to cover the verandas and galleries adjoining. The roofing material, whether tiles or thatch, would accommodate itself much better to a continuous than to a broken surface; and the curve so obtained would be always beautiful. Mr. Choisy [14] finds a further cause in the use of lashings to replace nails, pins, and tenons; for if two hip rafters or gable rafters are lashed to the wall-plate, then the three timbers cannot lie in the same plane; the lighter rafters and the roofing material will have to curve, however little, and the curve, once suggested, would be adopted, and its degree increased by doubling the wall-plate. Mr. Choisy's diagrams are not finally convincing; in this, as in other questions connected with Chinese building, only a continued study can be expected to give final answers.



30—Diagram showing probable origin of curved roof. (Drawn by E. P. C., from design by the author.)

China is the land in which Ceramic Art has reached its highest development; and brick building in all its forms, including elaborate work in terra cotta, has been in use for many centuries. Good flat-bedded stone is also abundant in many parts of the empire. We have, therefore, the massive walls of many cities, the vast "Great Wall" of the provinces north-east of Peking, the arched gateways and long stone bridges with parapets of cut stone of a fashion reminding one of the rails of the Sanchi Tope (Fig. 4); bridges whose separate arches are often of 40 feet span, like those of the very noble bridge over the Siang River, at Ping Siang, given in Fig. 31; the stone-built temple towers, the superstructures of some city gateways, most massively built of squared stone; huge quays, with retaining walls 20 feet high, along the river fronts of far inland cities; even simple street shrines built of solid masonry in close imitation of the lofty octagon towers of famous temples, and "road-rests" or "coolie shelters" through which the road passes, and which are solidly built of large bricks and roofed with glazed tiles—all contrasting with the timber-

[14] Histoire de l'Architecture, Chapter VI.

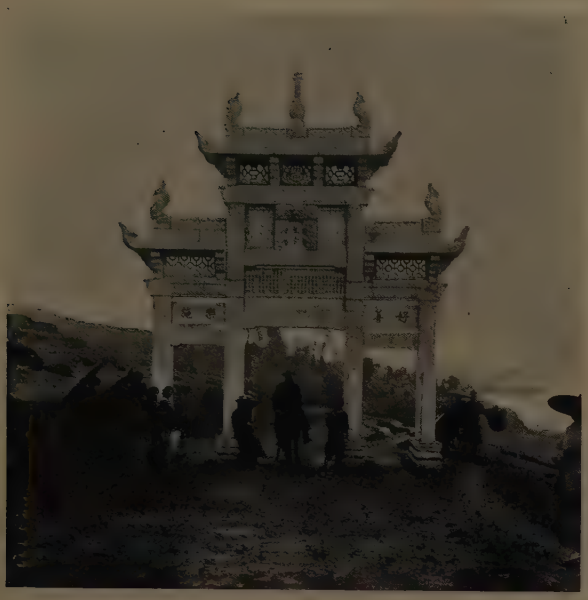
built temples and halls and the huge cantilever bridges of a people who have forests to draw upon, and no undue contempt for an architecture of wood.

All this abundance of means and skill in building is evident enough; but it does not appear how early was the introduction of such thorough methods into China. The true arch, built up of wedge-shaped solids, was known in China many centuries ago; and in this respect the Chinese may have been as far advanced as the Etruscans. Moreover, if Chinese knowledge of the arch does not carry with it any great achievement in decorative building, the comparison between this people and the ancient Etruscans is at once suggested. Of

31—Stone bridge at Ping Siang. (From photo. by W. B. P.)

the Etruscans, also, we have no trace of arcuated buildings; and if the Italian people had the arched gateway (see Vol. I, Figs. 204 and 205), the Chinese have built many bridges of elaborate structure. The Chinese have one decorative form of arch unknown to Europe, that with the polygonal intrados and nearly semicircular extrados—a form capable, certainly, of effective use in a stone-built edifice.

Fig. 32 shows a huge stone pai-loo on the banks of the River Lei, a tributary of the Siang River in central China, in the province of Hunan; a region wholly closed to foreigners until about 1900 A.D. This is of comparatively recent construction. Fig. 33 gives a much larger memorial gateway of the same sort, at Chen Chow in the prov-



32—Stone Pai-Loo, on the Lei River. (From photo. by W. B. P.)

33—Stone Pai-Loo, at Chen Chow in Ho-Nan. (From photo. by W. B. P.)

ince of Honan. Fig. 34 is a very heavy and elaborate arched gateway at Peking, on the road leading to that Hall of the Classics which is shown in Fig. 28. In this instance it is curious to see the accepted

34—Arched gateway, on the path leading to the Hall of Classics (see Fig. 28).
(From photo. by W. B. P.)

—the traditional—forms of the pai-loo, retained in the decorative treatment of an arched structure. It recalls the constant use by the Roman imperial designers of an arcuated system of building adorned by the vertical and horizontal lines of a pure trabeated construction.

CHAPTER III

JAPAN

THE architecture of Japan is obviously and by universal confession derived from that of China. It appears that Korean workmen, crossing the narrow sea, introduced many of the traditions of building into the island empire; and the invasion of Korea by the Japanese in 1592 A.D. caused a further identification of the island traditions with those of the mainland. Korean art has not been studied, and may be assumed to be a branch of the great art of China; but it should be studied apart from Chinese architecture because of its partial independence at different times, because of the influence of the Japanese, the most original and energetic of Eastern peoples, over their nearest neighbour, but more especially because of the accepted tradition that Chinese art originally passed to Japan by the hands of Koreans. The architecture of Korea has been as little investigated as that of China, but we have photographs, at least, and they provide some record of a very beautiful architecture. The building which Mr. Percival Lowell calls the Audience Hall in the palace of Seoul [15] is a pavilion as delicate in design as any of those temple-buildings which we study in Japan. The gateway towers of the larger cities are fully as impressive as those of Peking; the pavilions with heavy tiled roofs given in photography and in drawings made by recent travellers, from photographs or from the buildings, show a refinement of curvature and a respect for proportion which is at least equal to that which we find in those buildings which form a part of the landscape in China and Japan. Colonnaded pavilions in the palace of Seoul have been published in periodicals during the summer of 1907, while the news from the Far East has been exciting, and one of them is published by Mr. Lowell in a good photogravure. The same

[15] "Chosön, the Land of the Morning Calm."

volume contains a view of the columned hall in the Palace of Summer in which the effect aimed at by the builder has been very similar to that given in the Chinese building (Fig. 27). Mr. Homer B. Hulbert [16] has given us photogravures of quite admirable pavilions in the palace and town of Seoul with heavy tiled roofs and light decorated balconies, all worthy of study. Mrs. Bishop has added to the photographic plates of her book,[17] one of which shows the famous Gate of Victory at Mukden, tail-pieces engraved by Whymper, evidently from photographs and full of interest.

The curious memorial shafts, copies in solid marble of actual temple towers and erected apparently with special reference to historical events, and the lives of famous men, preserve for us some of the ancient forms of what we call the pagoda. The unchanged condition of the community of the "Hermit Nation" has allowed relics of primitive barbarism to remain side by side with very refined architectural monuments.

At an early period the Japanese used wood, stone, and brick in building. Stone has never been found, or at least never quarried, in Japan, which is of good, flat-bedded character, lending itself naturally to the building of solid walls of reasonable thickness. The abundant rock of the country is generally volcanic either in the strict sense, or at least igneous rock, such as varieties of granite and gneiss. The use of these materials is seen abundantly in the fortress walls, as of the Mikado's castle at Tokio, and that one at Higo called Humamoto Castle. Brick would naturally be a common material in the hands of a race as skilled in ceramic art as the Japanese have been for at least a thousand years, but timber has been from the beginning the favourite one in the empire, and brick appears in decorative architecture only in the form of coloured and glazed roof tiles. What is strange to Europeans is that it is uniformly of timber that the most elaborate and important buildings have been constructed. This comes in part from the presence of exhaustless forests; from the pleasant and equable climate, seldom going into excess of heat or cold; and from a natural disposition among the people to build and to design, to dress and to live in a simple fashion, with but little expenditure of time or money upon display. The very fact that the Japanese use no furniture in the European sense, neither tables thirty inches

[16] "The Passing of Korea"; New York, 1906.

[17] "Korea and Her Neighbors," by Isabella Bird Bishop, third edition, 1897.

high, nor chairs; their willingness to dispense with window-glass, substituting the translucent paper which they manufacture in such abundance and strain tight upon wooden screens; their disposition to neglect such luxuries and conveniences as are in use in Chinese dwellings, while taking over from that great empire the art, the learning, and the beliefs which are confessedly the root of their own progress —these things have tended to preserve the ancient simplicity of the Japanese dwellings even of the territorial nobles of the old feudal system, and even of the imperial court itself. As the dwelling has been, so has been the temple; and the great Buddhist shrines which are unchanged and uninjured after centuries, are marked by timber buildings, all conforming to three or four great general types, and by a multitude of small memorial structures, they alone being of material more apparently durable than wood.

It is, moreover, a characteristic of the people of Asia not to strive for the combination, into one vast monument, of many different halls, passages and rooms meeting different requirements. The palace or the temple is, in Asia, a group of separate pavilions, towers and porticos arranged in a park or surrounded by a free growth of trees, much in the way in which a large Roman villa was laid out, although perhaps with even more perfect freedom from architectural restrictions. The great Indian temples seem for the moment to furnish a contradiction to this general rule, but the contradiction is only apparent. The lofty and ponderous towers of masonry are not large in proportion to the spaces which separate them. It is still a system of gateways and shrines, porticos and tanks of still water, all surrounded by tropical vegetation. So in Japan an even wider landscape effect and an even less pompous architectural ordonnance, in their temple and palace design, have satisfied the spirit of one of the most resolute and most artistic peoples of the world.

The recent conscious change of the Japanese political point of view, and acceptance of a place in the so-called family of nations, finds a parallel in the deliberate expression by their own able writers of the sentiments underlying their national arts. Thus it appears to be recognized by the Japanese that people of insular residence are less apt than others to have a feeling for the gigantic, the elaborate, and the massive. In a curious way this avowed peculiarity of the island empire on the eastern shore of Asia is confirmed by what the traveller finds in the island empire of the West; for no one can

leave Paris or Berlin or even the minor cities of the Continent for English travel and the observation of English cities, without noting the comparative indifference of the islanders to the broad avenue, the stone-built quay, the stately palace building—to magnificence and stateliness. In like manner it is urged that an architecture of vast, massive buildings would agree ill with a mountain landscape, a country of broken and irregular surface and thickly wooded. And, again, although the great cities extending over miles of country seem to offer different surroundings to the palace building if it were required, yet are those cities so completely made up of small and unpretending dwellings, low and broad and built of wood and paper, that a stone palace like the Luxembourg, the Pitti, or Somerset House would be out of its proper place. These influences, together with the already accepted use of timber as the chief building material, are cause enough for the avoidance of the stately plan and the long-drawn façade.

Since the year 1875 there have been several embassies or commissions despatched to Europe, and this with the avowed purpose of examining western ways of building and planning, and architects and others thought to be of good counsel among western nations have been asked for their opinion as to this crucial question. The Japanese avow a desire to have their buildings less combustible than of old, and express some disappointment that our masonry buildings, so called and so considered, should still burn so easily and with such disastrous consequences. It is to be hoped, therefore, that the nation will preserve its ancient architecture as a modern and a living style, and it has been suggested by western students of the Orient that the Japanese system of building might be transferred from wood to metal with less risk of the loss of all natural charm, than if the indigenous building were abandoned altogether for a stone and brick construction. The wooden architecture of Japan might become an architecture of bronze among those wonderful metal workers of the Far East, and the world might be the richer for the exchange.

The To, or temple tower of Yakushiji, near Nara, made famous by western explorers as "the first undoubted work by a native architect," [18] was built in the seventh century A.D. This building is considered by the Japanese as a three-story tower. It is generally in good repair, except where the overhanging roofs and balconies, es-

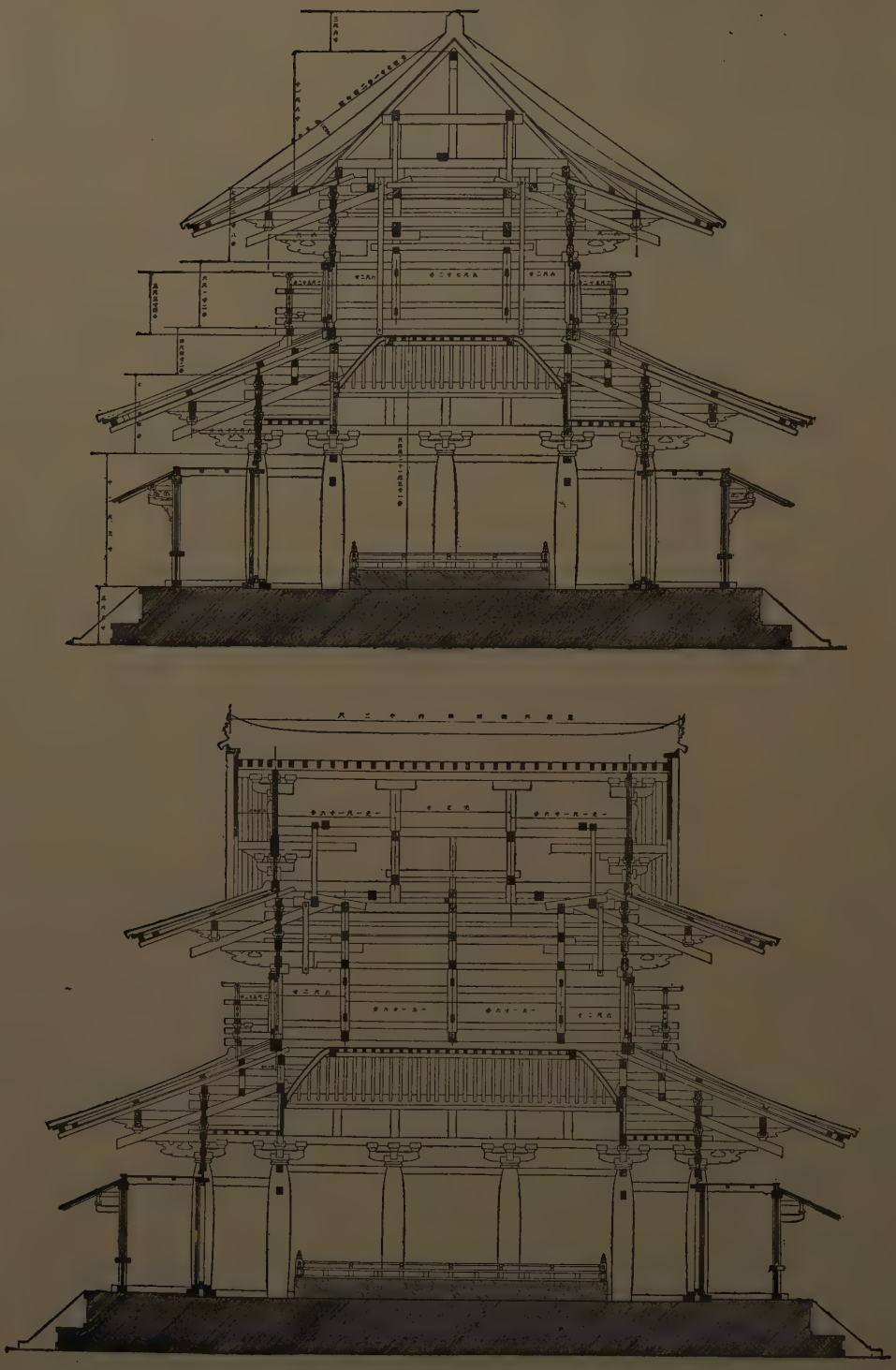
[18] See Impressions of Japanese Architecture and the Allied Arts, by Ralph Adams Cram; New York, 1905.

35—Temple tower at Yakushiji, Nara. (From photo.)

pecially the uppermost roof, have received reinforcing stays of timber, which, while they preserve the ancient structure, and save it from "restoration," greatly mar the effect of the beautiful proportions. Fig. 35 shows this tower, in which it will be noted how great a diversity of form was sought for by the Japanese artist. It seems to be admitted by European students that the Chinese or Korean form, seen in the Hondo of Horiuji, built about 650, and which includes a great severity of design—the roofs having a slightly decreasing spread or

36—Buildings of the temple Tenno-ji, at Osaka. (From photo.)

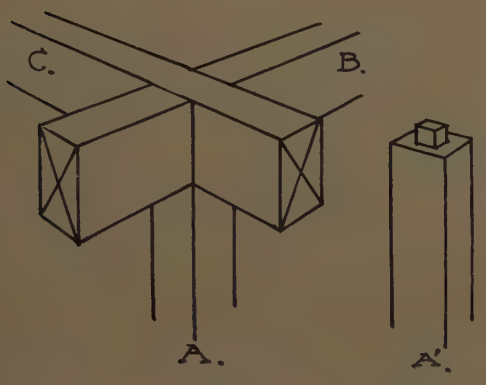
overhang—failed to be perfectly acceptable to the native Japanese designers. Mr. Cram, in his book cited in the note, compares this change in method of design with the development of mediæval art in Europe. The general character of the Yakushiji tower is further elucidated by Fig. 36, illustrating a tower still older in its original foundation, but certainly rebuilt at a later time. This tower, that of Tenno-ji at Osaka, and the temple proper or Hondo, display a more elaborate sculptured and coloured ornamentation than does the graver tower of Yakushiji, but the exquisite curves of the roofs, and the gen-



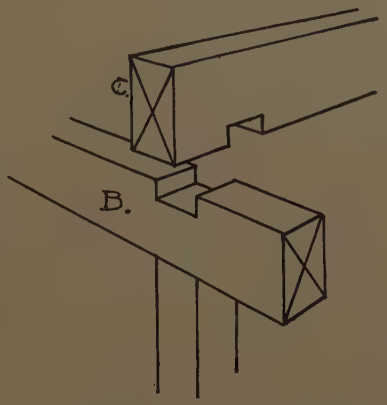
37—The Hondo at Horiuji, Nara, work of the sixth century A.D., and commonly ascribed to Korean builders. Height from floor to ridge about 58 feet. The lowermost pent-house roof is modern. (Drawing by a Japanese of Western teaching. From A. & B. Dicty.)

eral harmony of proportion in the Osaka tower are, perhaps, as fine; and are not marred by the modern props and stays. The classical monotony of outline in the Osaka building (Fig. 36) was destined to remain more generally popular in China as well as in Japan, than the more daring design of the Japanese innovator, as at Yakushiji.

The beauty of the double and triple curvature of all these roofs commands immediate attention. The pent-house slopes are covered



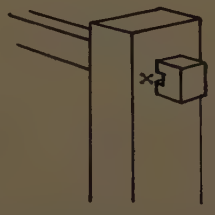
38—Diagram of wood construction.



39—Diagram of wood construction.

with red or blue earthenware tile; the projections beneath the eaves which resemble dentils are the ends of the light rafters which carry this roofing.

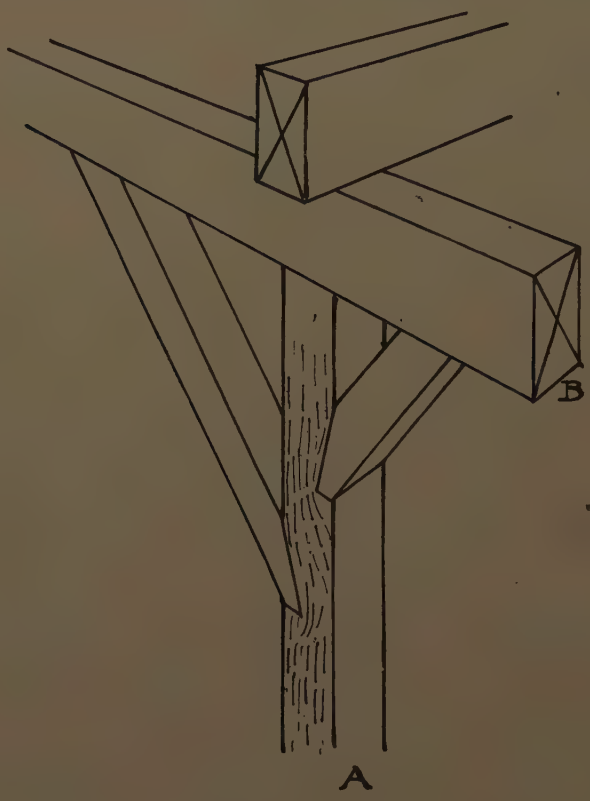
The famous To, or temple tower at Horiuji, near Nara, is very similar to those of Yakushiji and Osaka; and the Hondo (Kondo) of the same temple is also a beautiful building, more attractive to the foreign student, probably, than are the loftier towers. These two buildings of Horiuji are the only existing remains of the original monastery, and were built about 650 A.D. They are, therefore, the oldest monumental buildings in Japan.



40—Diagram of wood construction.

The sections (Fig. 37) show the construction of the Hondo at Horiuji; and as this is the oldest piece of timber-framed architecture known, it is necessary to speak of the marked peculiarity of timber building—the essential need of fastenings at the points where one timber meets another. Thus in Fig. 38, *A* is an upright post (one of several) and it supports the horizontal timber *B*. At the point of junction *A* may be cut as shown at *A'*, with

what is called a tenon left projecting at the end. A corresponding hole cut in the under side of *B* is called a mortise or mortice. The purpose of this is to keep *B* in its place and resting firmly, and to keep *A* from losing its verticality. *C* is another horizontal, and this may be halved down upon *B*, so that the backs of the two timbers may come flush, as shown; or each may be cut away to a much less depth, as in Fig. 39, and the two cuts fitted together. Another method



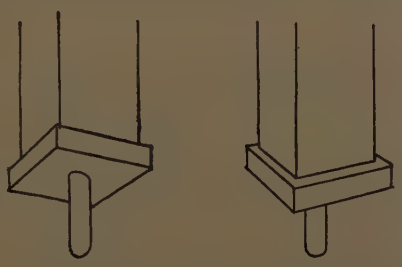
41—Diagram of wood construction.

is to pass one member of the frame through a hole in the other, either in its full dimension, as shown in Fig. 40, or cut down to a tenon, and to pin it fast through a small hole *X*.

The modern Occidental way of making such an assemblage stiff and therefore permanent is to put in a brace or two braces, as at Fig. 41, where *A* receives the two braces at different levels, so as not to be too much weakened in one place by the two cuts. But in Grecian and Roman work, and again in China and Japan, these diagonal

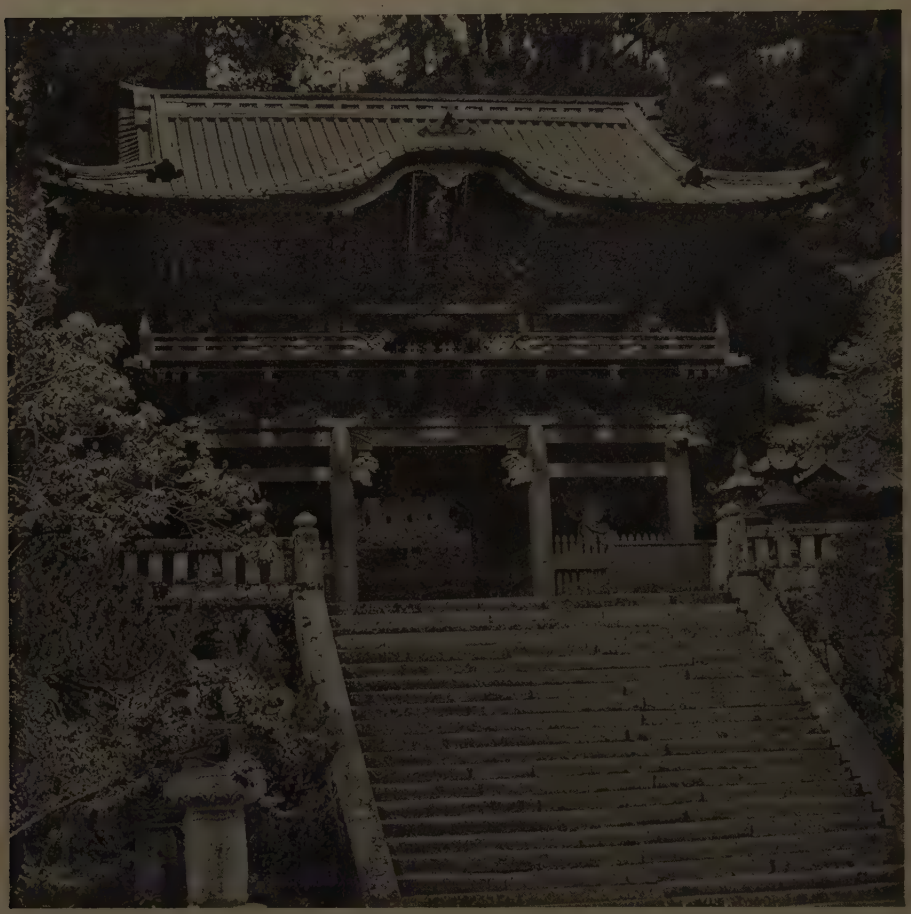
braces are not a recognized part of serious building, and the architect treats timber more nearly as if it were stone, using pieces of large scantling, and depending upon weight and friction much as in dry masonry; but always observing the need of securing the points of contact and attachment. The figures in the preceding chapter explain this in connection with Chinese building.

So far there has been considered only what may be called European ways of holding together the parts of a timber frame; but the Japanese, who in this matter represent Asia, use another method which Europe would be glad to use if it were considered safe. If timber could be held securely, the ends fitted into a box or socket, no difficulty would be found except the mere expense of the metal fittings and the added care in workmanship. Timber, however, decays very fast if shut from the air, and all constructors know how dangerous it is to put the bearing part of a truss into what is called a shoe, even when this is made of separate plates of iron and is far from being air-tight. The Japanese builders, however, know how to overcome this tendency of the wood to decay; whether it is done by preparing the wood in a special manner or by ventilating the sockets and mortises which receive the ends of the scantling, or by both means together, such construction lasts through the centuries in Japan. There is, of course, a great difference in wood, and yet no wood known is free from these weaknesses. Fig. 42 shows a method in use in the Southern States of America. A veranda post or the like is fitted with a plate of cast iron having a pin which fits into a socket in the sill of the floor. The hollow of the socket need not be more than an inch deep, and it is made as small as possible. All that is needed is to hold the post in place and to prevent the deposit of water which would accelerate the rotting of the wood. Timber may last for an indefinite space of time if dry or if wet, but it soon rots if wet and dried alternately. This tendency, of course, can be counteracted by continual care. In the Japanese temples which have lasted through the centuries, that care has been constantly provided. Continued watchfulness has kept all parts of the structure as perfect as they were at the beginning. Fig. 43 shows the front of the mausoleum at Shiba



42—Diagram of wood construction.

Park, Tokio, dedicated to the wife of the second Shogun of the Tokugawa family, about 1630 A.D. The two round pillars which flank the entrance doorway are seen to be fitted at the top with sockets of bronze, which have a wing or attachment, also of bronze, which receives the end of the plate or wooden lintel on either side. In like



43—Pavilion in Shiba Park, Tokio. (From photo.)

manner each of the horizontal braces below this plate has a metal socket at either end.

Nearer the pavement are seen methods of framing more familiar to Occidental students. The heads of horizontal braces are seen abutting on the round pillars, and these indicate a further means of assisting the construction; for on the right hand near the top of the stone steps it is seen that a piece lying in the plane of the front has

its tenon carried through the upright post, and that another piece running at right angles with the last named has its tenons showing on the front or outer side of the same pillar.

Fig. 44 shows a large detail of the wall at Nikko, known as the Wall of the Hundred Birds. A view is taken from below looking upward, which causes the distortion. It shows in a very perfect way two common forms of metal appliance for the securing of joints in woodwork. Where the large cylindrical upright passes through the

44—The Bird Wall, at Nikko. (From photo.)

horizontal pieces, a heavy bronze bolt is driven horizontally through both timbers, and the head of this bolt has a double washer, each part of which is made ornamental in a very elaborate fashion. The smaller scantling which forms the immediate frame for the sculpture is held at the corners by a very elaborate surface-plate which holds together the horizontals and verticals by its mere stiffness as a piece of metal, retaining the right angle and preventing the parts from yielding at their points of junction. This picture shows, moreover, the Japanese method of filling the wall surface in a most decorative way. The

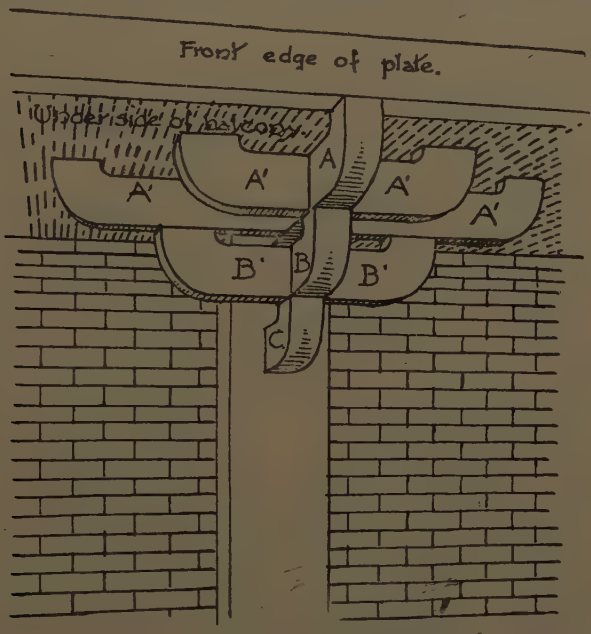
reader is aware that the wood-framed house, in a village or in the country, in which he resides or visits, has no solid walls, but is a structure made up of uprights held together by horizontals and with the open spaces covered and closed by means of boarding, shingles, lath and plaster, or the like. The Japanese use paper for these purposes to a very great extent, but such paper as Europe does not know except on objects of taste or fancy brought from Japan. When, however, a truly monumental effect is to be produced, the open spaces in a timber-framed wall may be filled with bas-reliefs, as the metopes of a Doric temple are filled (see Vol. I, Figs. 118, 119, and thereafter); and this filling in Japan is often of deep and rich sculpture, either carved in wood or cast in metal or perhaps modelled in pottery, glazed and coloured. Stone carving exists also in such cases, but is rare.

In many of these peculiarities of Japanese decorative building the resemblance to the ways of the Gothic work is curiously close. The Gothic architects also have a structure made up of slender uprights with great spaces between them, which spaces are filled with light walls, stone or glass, mere screens against the weather, without constructional value. In Gothic architecture, too, the designer does not seek for the appearance of ponderous dignity. He is more concerned with the expression of the construction, which alone suffices for his inspiration.

Fig. 43 shows also a method of framing peculiar to the Far East; the brackets which support the balcony above the first story. The structure of these brackets is a curious study for the European, who, in such a case, would put together a frame of the general system as that shown in Fig. 41, carved or painted or even made more elaborate in structure to suit his fancy. The Oriental knows nothing about the triangle in framing. Like the great Greeks before him, he builds in timber and in stone with uprights and with horizontals. He knows, however, the qualities of the timber, its peculiar tenacity in one direction and its feebleness in another, and he knows that where a forked stick can be had of somewhere near the right shape, a little cutting will make it a useful tie or stiffener, without losing its strength. In short, the knee of ship-building is used on a small scale by the Japanese for bracketing or corbelling in wood, and for the support of balconies, overhanging roofs, and the like. Fig. 45 shows a very rough sketch of the system used in the supporting of the balcony in Fig. 43.

One primary bracket, A, is supported from below by secondary brackets B and C, and these give off side brackets A', the longer of which are further stiffened by those coming from below, B'. Such bracketing as this is carried to extraordinary development in the support of timber roofs as seen from within.

Japanese plaster is of great hardness and durability. In this it seems to resemble the Roman plaster of which Vitruvius tells us, and which is utterly unknown in modern European practice. There are various forms of plastering, some of which are like stucco, and



45—Diagram of bracketing in Japanese wood construction. (Drawn by E. P. C. from design by the author.)

others have a different texture and resemble rather the composition used in picture frames, imitation carving, and the like. With the free use of this material, carved and gilded and used for interior decoration, the Japanese combine an unexampled skill in decorative metal-work. They use many alloys, all of which pass for us under the general name of bronze, but which have distinctive names in the East.

As in other Asiatic nations and as in ancient Europe, sculpture is never imagined as devoid of colour. There is an additional decorative appliance familiar to the Japanese but unknown in Europe,

that which we know as lacquer decoration, although lac, the produce of the insect, has nothing to do with its make. This lacquering may be as fine and costly as that which makes a little box worth some thousands of francs or dollars, but it may also be heavy, applied in thick coats and extremely durable, and in this case is applied to house-building as to other industries. The result of this decorative appliance, added to a light and slight construction like that of the Japanese, has been the excess of adornment found in the decoration of the eighteenth and nineteenth centuries. The critical students of Japanese art, native and western, agree in this—that the period of the Ashikaga Shoguns, beginning near the close of the fourteenth century A.D., was marked by a constantly increasing excess of ornamentation, and by a gradually increasing indifference to the refined design of earlier days. The Tokugawas of the sixteenth century are thought to have brought in a still more brilliant and less subtile design. To a student of European decoration the painted and sculptured adornment of the Japanese is still, in its wildest flights, refined beyond experience and beyond power of imitation; but as compared with the work of earlier days, it is recognized as overloaded. Fig. 46 gives a good example of this later and controlling style. This gateway in Shiba Park is of the eighteenth century A.D. The posts are of wood elaborately carved, and finished with gold lacquer of a kind that would seem to an untaught observer the gilding of Europe. The large panels at the side are of soft stone. The combination of such elaborate carving as is seen in this porch with those rich and varied colours which the photograph cannot reproduce, makes up the decoration of the Tokugawa period, beginning about 1580 A.D.

It is to be noted, however, that Japanese colouring does not excel in exactly the same direction as that in which the Chinese are masters. No careful student of Japanese lacquers, pottery, or metal-work has escaped the conviction that the Japanese designer prefers compound hues and tints of delicate gradation to the primary colours. The Chinaman is past master in the combination of dark blue, light blue, crimson, vivid yellow, and metallic gold, as in the wonderful *cloisonné* enamels; but the Japanese prefers a different chord, and hardly does his best when bright colours are a necessity. Gray of many kinds—warm and cold, fawn colour, drab, buff, and especially metallic effects got by mingling coloured gold with the alloys, dark blue, silvery gray and dull red, these are the pigments on

the Japanese palette, and he deals with them in a way unmatched alike in ancient and in modern times.

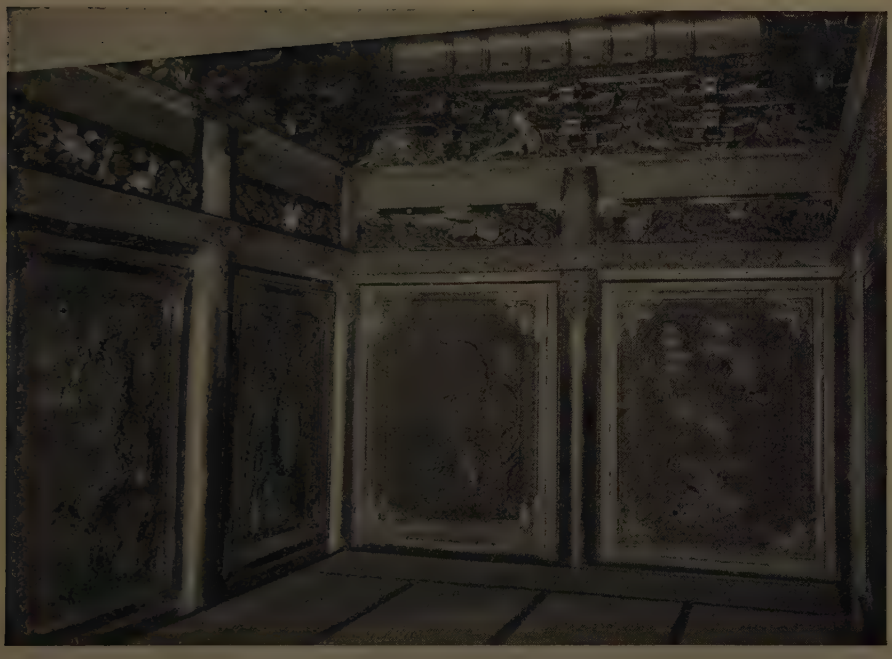
Like the toran of India (see Fig. 6) and the pai-loo of China (see Figs. 29, 32, and 33) the Japanese have the torii—the "Bird

46—Gateway of the Imperial inscription, Shiba Park, Tokio. Tokugawa style. Eighteenth century. (From photo.)

Perch"—which serves as a ceremonial entrance to a sacred enclosure, which stands at the head of a flight of stone steps or a long-continued slope giving access to a temple, and which serves also as a frame through which a famous landscape or point of view is expected to be seen. Fig. 47 gives one of the oldest and best known of these, and

47—Torii on lake-shore at Nikko. (From photo.)

it is fortunate that it should be also one of the primitive structures in which the origin at once of the name and of the curious form is still visible. The same general disposition is carried out in cut stone with heavy round columns two feet in diameter; and again, though rarely, in bronze, in which case the ductile metal is utilized to receive delicate ornamentation.



Interior; Nikko, Japan. (From photo.)

CHAPTER IV

PERSIA, 226–642 A.D.

IN Book II, Chapter II, the architecture of the Persians is considered as it existed under those Achæmenide kings who fought with Greece in the fifth century B.C. The resistance of the Greek republics to the Great King has so impressed itself upon European study and thought, that we of the West involuntarily assume an inferior intellectual and moral position for those people of Media, Persis, and Parthia who formed the strength of the Persian state in antiquity, and whose descendants are the Persians of to-day. And yet the inhabitants of Iran are one of the great races of the earth; their personal beauty is celebrated, and the artistic history of Persia is one of the most interesting possible, in spite of the relatively slight study which has been given to it by Europeans. At all times the people of that country which lies between the Indus and the Caspian Sea have been recognized as the greatest known masters of decorative painting in the limited sense, and of invention in the way of anthemions and scrolls, especially in coloured inlay and flat pattern. The creation of unreal flowers and vegetation of extreme beauty is almost the secret of the Persian designers, and this strange gift is shown in their painted tiles, known to all the world as inspiring the decoration of the Cairene mosques and the Byzantine wall-mosaics alike, the earthenware platters and dishes for which Europe pays fabulous prices, and also in the exquisite embroideries in which the work of the earlier centuries and of remote times vie with one another. And as we approach the European building of the Middle Ages, we have to stop at the threshold of our inquiry to consider the architecture of the Sassanid epoch, 226–642 A.D.; for the building of Persia at that time was almost as influential over the mediæval builders as was that of the Roman world.

That epoch succeeded four centuries of Parthian rule. The Parthians were not foreign conquerors of Persia, but the northern citizens of the empire—the inhabitants of the great country immediately south-east of the Caspian Sea. In consequence of political changes hardly understood by European scholars, the less civilized people of the north got control of the empire; bringing with them a different religious belief and very different political and social influences from those which were strong with the people of Persis or Persia proper, on the Persian Gulf, with its neighbouring province, Susiana, and those of Media, the most westerly province, that which adjoined Assyria. The Parthian princes held their own from about the middle of the third century B.C., and controlled a greater or less part of the ancient empire of the Achæmenides. It was they, according to the Roman records, who fought with the Roman armies during the years of the Triumvirate, the late republic and the early empire of Rome, and who destroyed the army of Crassus, 53 B.C. In the second century A.D. they seem to have held sway over the whole Persian realm, and they were the most formidable enemies of the earlier emperors of the Romans; but when, in 270 A.D., Aurelian conducted a war against Zenobia of Palmyra, the doubtful ally of Zenobia was the restored Persian dynasty, which we call that of the Sassanians or Sassanids, and whose date of accession to complete mastery we fix at 226 A.D.

The buildings which we have to discuss in this chapter are generally considered to be of the Sassanid period, and there are none whatever of any importance which we accept as of the Parthian rule. It is probable that the Parthian tribes and their princes, the Arsacidæ, were of but little importance as builders or as decorative artists. The people of that region even now have but those arts which to all appearance have come to them from the people of the south—the weaving of rugs and the making of brilliant embroideries. The palaces described below as standing at Firouzabad [19] and at Sarvistan [20] are of disputed date, for at least one able and careful writer constantly referred to in these pages, Auguste Choisy,[21] contends for an earlier date, seeming to argue that these palaces are of the time of the Achæmenides and represent the earlier vaulted structure as contrasted

[19] Firouzabad, in the modern province of Fars, N. Lat. 29°; E. Long. 52° 30′; nearly.

[20] Sarvistan or Serbistan, N. Lat. 29° 20′; E. Long. 53° 10′; nearly.

[21] Auguste Choisy: Histoire de l'Architecture, Paris, 1899, Chapter IV.

with the columnar building of Persepolis. This opinion is that adopted by the writers of some of the modern guide-books. See what is said in Vol. I., page 91 ff. But as the palace at Ctesiphon [22] is given, with hardly a dissenting voice, to Chosroes I (reigned 531–579 A.D.), and as that building is in all important respects a re-echo, as it were, of the two palaces just named, so it seems that the same conditions must have prevailed over the building of all these structures.

There is another reason for accepting the later date for these buildings, and that is the strong similarity in structure and in the general forms of design between these buildings of the country south of the Caspian and the buildings of Europe during the same and immediately succeeding periods. These late Persian buildings are such that they might well be thought either the results of the study by eastern men of western post-Roman building; or, again, the prototype of that building, at least in its Byzantine form. It is indeed evident that the same spirit of building and of architectural ordonnance controlled both the Asiatic and the European vaulted and round-arched style, between 400 and 900 A.D. One general tendency is found to exist all over the Mediterranean lands, even taking that phrase in its widest sense. The vaulted structure with mortar-masonry is the recognized type of all building, from Afghanistan to Scotland and Spain, and the minor question whether the material is baked clay, or sandstone, or limestone, or flint, alone divides the Romanesque [23] work of Gaul from the Byzantine work of Asia Minor and Thrace, and that from the palaces of the Sassanids. Allusion was made to those palaces on pages 93 and 95 of Vol. I; it now remains to explain the disposition and structure.

Figs. 48 and 49 are studies of the outside and the interior of that palace at Firouzabad, the plan of which is given on page 93 of Vol. I. The original plates in the Voyage en Perse are far more attractive, but these reproductions follow them with accuracy.

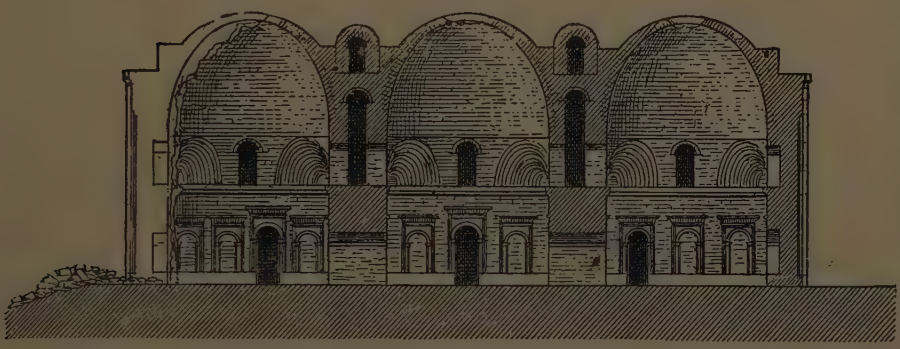
This palace is nearly 350 feet long (see the plan above mentioned) and about 180 feet wide, as shown in Figs. 48 and 49. The three cupolas, then, seen in Fig. 49, are each of not exceeding 50 feet in span, and the halls roofed with wagon vaults are never more than 30 feet across from wall to wall. The palace at Sarvistan is still smaller

[22] Ctesiphon, on the left bank of the Tigris, south-east of Bagdad, N. Lat. 33°; E. Long. 44° 35′.

[23] Romanesque: see account of the term below, Book VII, Ch. I, and Book IX.

in its general dimensions, and also in the span of its vault. In both buildings the entrance to the great oblong halls is commonly through a vast arch, either as large as the roofing-vault itself as seen in the entrance porch (Fig. 48),[24] which may be compared with the plan in the first volume; or else smaller than they by merely a projecting impost or archivolt, as seen in the plan, on the right and left of the great entrance. It is one of those arches, barely smaller in span and

48—Diagram of the façade of palace at Firouzabad. (From P. & C., following Flandin & Coste.)

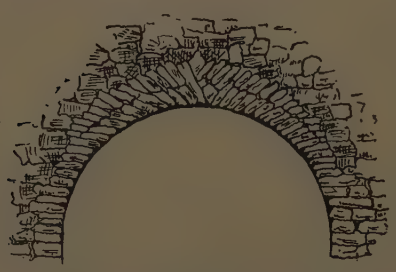


49—Diagram of the section of palace at Firouzabad. (From P. & C., following Flandin & Coste.)

in height than the vault of the roof, that is shown in Fig. 50. Moreover the work is done with a headlong indifference to all refinement, contrasting in a curious way with the deliberate care given to the surface decoration. In this vault the large flat stones have been piled

[24] These great halls, opening freely into the outer air, with entrance doorway of the full width between their walls and as high as their vaults, are called *throne-rooms*, with an obvious allusion to the eastern use of the gate of the palace as the spot where the sovereign renders justice.

in with a great abundance of mortar made with excellent lime and sand, and this compact mass is trusted to stand as if it were hewn out of a single block, all considerations of skilled mason-work being abandoned. It is evident that such an arch must have been turned upon a carefully made wooden centring, and it appears that even with this precaution the requisite uniformity of the curve could only be obtained by an elaborate plastering of the rounded surface; traces of which plastering remain. On the other hand, the thrust of the arches and vaults has been taken up in the most sensible way, by always providing such masses of masonry as were of sufficient size and weight, and by combining this masonry in the form of walls and partitions. The plan is as sagacious in this respect as that of a Roman vaulted basilica.



50—Masonry of an arch in palace at Firouzabad. (Drawn by E. P. C. from Dieulafoy.)

At Sarvistan the principal hall is 41 feet square; and four arches spring from the four corners of the hall, the space between the walls carried by the arches being much smaller than the surface of the floor. These great arches, however, carry only a gallery of their own horizontal width, or thickness, so that the cupola is of the full size of the square as determined by the floor. Four pendentives, or rather trompes, like those shown in Fig. 49, carry this cupola. The whole of this interior was left in rough mason-work, to be adorned by applied plastering and other surface finishing. We are never to forget the strong tendency of nations gifted with a sense of pattern designing and surface ornament to build in any simple and permanent way, and then to cover up the building with an inner coating, whether of solid slabs or of soft plastering which hardens after application. This system is the very reverse of the later Romanesque and the Gothic art of the north-western nations of Europe. We shall find this tendency as strong in Byzantine building and again in Italian mediæval work as in Persia—the difference being merely that the influence of the northern nations of Europe gave to the Italians a stronger sense of the delight which may be got from the actual structure itself.

The above remarks apply only to the richer ornamentation of superficial colour and of slight modelling in plastering and the like;

for the architectural decoration, properly so called, namely, that which is closely connected with the structure itself, is less considered. The door-pieces and window casings are of trivial design. The larger surfaces, as walls of front or flank, often show an unimaginative treatment which may be found almost unchanged in French or in German churches of the ninth century and thereafter. Thus, in the flank of the palace at Firouzabad, the breaking up of the wall by means of pilaster strips connected at top by little arches, is a motive familiar to all the post-Roman and pre-Gothic styles of Europe.

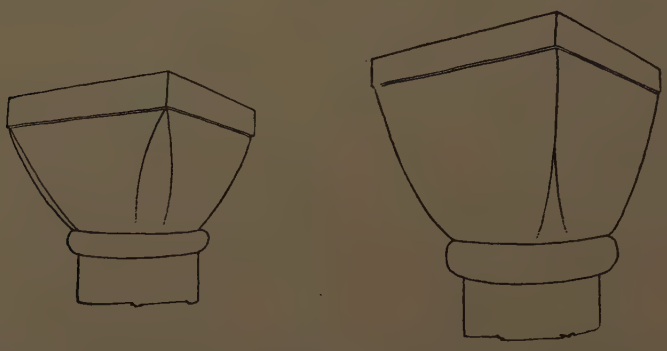
The great palace at Ctesiphon, the Takt-i-khosru, has nothing left of its once magnificent extent but the great front. This monument, the most famous, probably, of western Asia, towers above the Tigris and has formed the subject of innumerable paintings and drawings made by travellers. The great arch in the middle of the front, nearly 70 feet wide and more than 90 feet high, was once the front of the throne-room, as described above in connection with Firouzabad. But though the great size of this vault and its very curious

51—Takt-i-Khosru, the great palace at Ctesiphon. (Drawn by E. P. C., from Flandin & Coste.)

curve, the exact mathematical character of which has not been determined, are most impressive (see Fig. 51), the most interesting feature of the front is after all the decoration of the wall face on each side of it by means of pilaster-strips in the form of engaged columns and otherwise, and of arched openings and arched panels arranged in long arcades, and also in couples and in groups of three. These, too, in their combination with the arched doorways of the ground floor, 10 to 12 feet wide, are almost exactly the architectural features which are applied to the front of French Romanesque churches, like those of Poitiers and Angoulême. Even the columns of the internal

arcades are Romanesque in character, and the arcades differ from those of the north chiefly in their excessive plainness. It is noticeable that none of these arched panels are pierced for windows, and that only two of the six larger arches in the ground story are opened into doorways. Fenestration, then, has nothing to do with this wall decoration, which would seem the natural resort of a race more accomplished in surface adornment than in organic design, and who could not bear the thought of leaving such large surfaces unbroken. And yet the Persians of this as of earlier times were such enlightened builders, that the student asks instinctively for an earlier style in which this arcading would have some deeper significance.

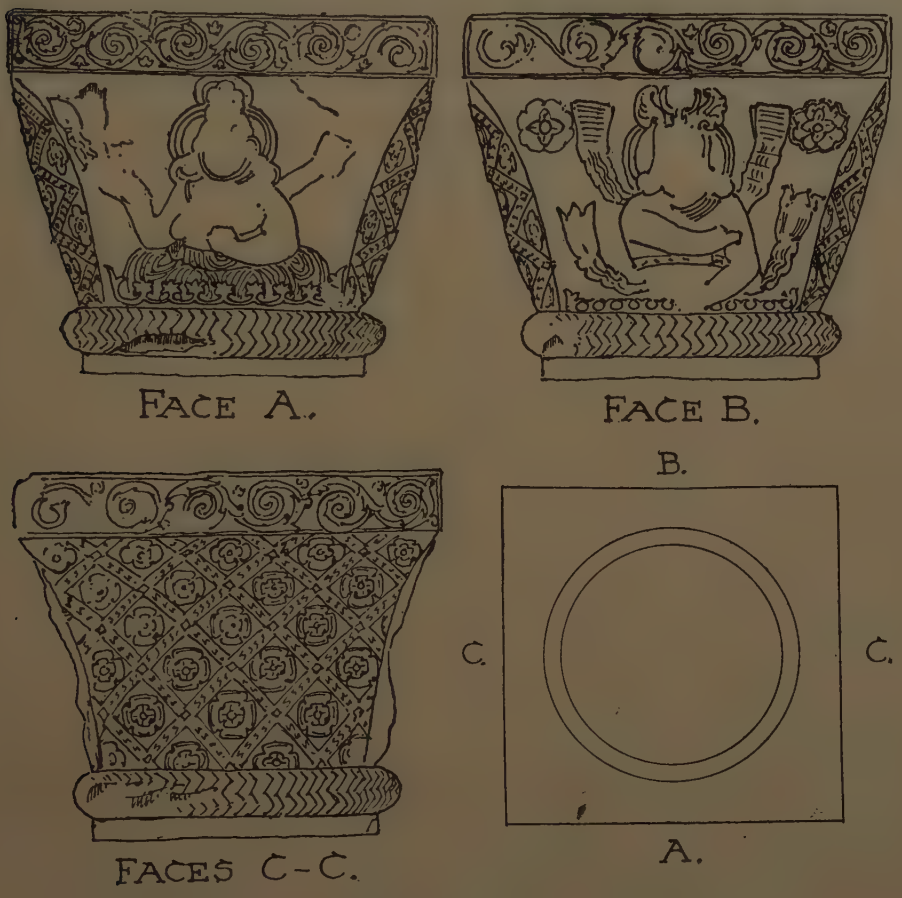
Fig. 52 shows two capitals from civic buildings of Persia, in which the character as of a French church of the tenth century is



52—Diagrams of capitals from palaces at Ispahan and Bi Sutoun. (Drawn by E. P. C., from Flandin & Coste.)

evident. The treatment of these parts, whether exterior or internal, without any apparent reference to previous traditions—with an apparent desire to consider only the rationale of the thing—is in the mind of the European student so closely associated with Romanesque architecture that the buildings which contain them seem to him to be of one and the same origin. Your capital is needed to carry the round shaft out to a square, and to spread a little, and all this to receive the abutment of the two arches which are to rest upon the capital. In order to do this you take a nearly cubical mass of stone, you leave the top of it square, you cut away the bottom to a circle, you carry the form from the circle below into the square above by any one of several methods—methods of which the very simplest is that used in the capitals given in Fig. 52. The pattern shown in *A*, Fig. 53, allows of sculptured ornament very closely akin to that of western

Europe. The religious significance of the figure sculptures shown in Fig. 53 is indeed different from anything of European design, but the manner in which the sculptured details are used to adorn the capital is not different in kind from that of the tenth century in the



53—Plan and sculpture of one of the capitals of Fig. 52. (Drawn by E. P. C., from Flandin & Coste.)

West. All of these are taken from the same capital, the rough plan showing the order of the faces, the design *C* occurring twice.

The most interesting thing for the modern inquirer is the absence from these buildings of anything at all resembling the carefully thought-out proportions and the minutely studied details of the Grecian and Greco-Roman work. That absence of the study given to every moulding and every projection or recess, has struck all observers, coming, as those observers do, fresh from the investigation of

classical architecture. The very fact of the presence of Greek buildings inspired by the Alexandrian conquests, in the near neighbourhood of these Persian towers and palaces, increases the force of this. On the other hand, it makes more noticeable still the close resemblance between these buildings and the earlier mediæval architecture of Europe. This subject is continued in Book VII, where it is noted that the continual reference to Byzantine types by the artists of western Europe is only removed by one step from direct consultation of the Oriental form.

BOOK VII—THE STYLES RESULTING FROM THE DECLINE OF ANCIENT ART

CHAPTER I

HISTORICAL SKETCH

THREE hundred years after the death of the great pacificator, Augustus, the Roman Empire was definitely settled as a personal government, and all vestiges of the republic had disappeared from the administration, even though the old names remained in use. This principate, however, had not the advantage common to most despotisms, that of a settled dynasty. If we ask what broke up the magnificent structure of the empire, the readiest answer is that the government was always, as in the beginning, a military chieftainship, and that the military followers of each great army leader saw their way to advancement by raising their chief to the principate. And the same influences were at work to tear East from West; until disunion prevailed in 395, and there were recognized an emperor in Italy and one in Constantinople. A century later, and the empire had been reduced by the founding of independent states under Visigothic, Frankish, and Vandal kings in Spain, Gaul, and Africa; and in the year 476 Italy also became a kingdom apart, and the Roman rule no longer existed west of the Adriatic Sea.

Times of irregular wars, frequent invasions, the splitting up of states, and the rule of barbarous captains, are not the times of artistic advance. The West struggled on toward social improvement, but slowly, feebly, with many hindrances and much discouragement. The slight revival of the eighth century was checked by new invasions in the ninth, plundering raids by Northmen and Saracens turning into permanent conquest. Then followed the time of superstitious dread, as the millennial year approached, and most men looked for the end of all things earthly. And it was left for the eleventh

century to see the definite beginning of architectural advance, and the establishment of the western art of the Middle Ages.

The earlier mediæval architecture is that which was derived in the main from Roman building of the imperial time. The name Romanesque implies that; but the term may be reserved, with advantage, for the more developed styles of the eleventh and twelfth centuries in western Europe. The peoples who gradually created that style of round-arched and vaulted building were all convinced of the superior excellence of imperial Roman work; they accepted the still existing monuments of the empire, and tried to preserve or to rediscover the traditions which had led to those achievements of the earlier time. But their first need, outside of the Byzantine domination, then limited to the lands east of the Adriatic, was to build cheap and slight shelters for families and for congregations. The centuries from 450 to 900 A.D., roughly, passed in poor living and hard fighting, with nothing but makeshift buildings to represent the art of architecture. Within the empire, that is to say in the Balkan peninsula, Asia Minor, Syria, and Egypt, a certain tranquillity still remained from the Roman Peace. The subjects of the emperor at Constantinople might live in dread of invasion; but always, throughout historical times, men had lived so, except for the 300 years from Augustus to Diocletian; and those Christian peoples of the eastern Mediterranean built their churches and their homes with some reasonable confidence in the reign of law. That was the land of the Byzantine architecture (see Chapters IV and V of this Book). The Mediterranean world outside of the empire was rather the land of the Basilican or Latin architecture, for which see Chapters II and III.

The term Romanesque architecture is generally used to correspond with the French *Architecture Romane*, and the German *Romanischer Styl;* and it is used in that sense in the chapters of this work, although its original meaning is certainly much wider. Chapters II and III deal with the Latin, Chapters IV and V with the Byzantine style; and Book VIII takes up that powerful outgrowth of the eastern art which we call Saracenic or Moslem architecture. Book IX deals with the established Romanesque, passing into Gothic, and the later Byzantine style. In all those chapters the most common plan of the Christian church is found to be that in which a long, straight nave is flanked by two or more aisles, and has a vestibule or narthex at the west end, and a chancel, usually in an apse, at the east end.

Round and polygonal church buildings also were common in all Christian lands.

Round buildings had existed in the time of the great empire, and the caldarium of a thermal establishment was often a rotunda. The tomb-chamber of Diocletian in the heart of his great palace at Salona (Spalato) and the temple of Jupiter in the same building, are

54—Tomb of Theodoric at Ravenna. (From photo.)

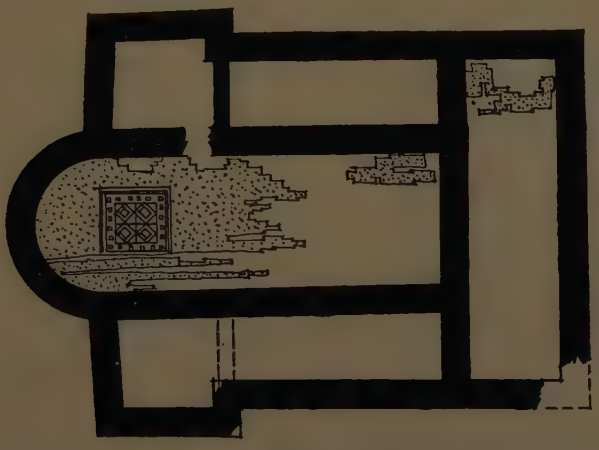
fourth-century structures of great interest for their admirable system of vaulting. The baptistery of Constantine at Rome is still attached to the Lateran basilica and retains its early disposition. The tomb of Theodoric at Ravenna, built after 526, is a surprising piece of testimony to the hold which the Roman traditions had obtained over a race of northern invaders as bold and independent as the Ostrogoths. This circular building, raised upon a high basement, as shown in Fig. 54, is roofed, however, somewhat in the Phœnician taste (see Vol. I,

pp. 96, ff.) by a single stone cut into the form of a shallow cupola; the handles left when the solid stone was cut, for the purpose of raising and moving it, being retained in place as if with definite ornamental purpose. The influence of these round buildings upon the early church builders is seen both in the East and in the West, for seven centuries after the fall of the western empire. A small church was very frequently a radiate building—that is, its plan was not long and narrow, forming a rectangular hall, but concentrated around a central space which forms the principal division of the building. If there are aisles, or an aisle, that lower structure surrounds the higher central part, which becomes a nave; but very commonly there are no aisles, and the church is a single chamber surrounded by chapels or galleries of arcades in two or more stories. Many of these churches, built before the year 1000, are known to us now as baptisteries, the larger church built in basilica form having filled the place of the early radiate church.

CHAPTER II

THE EARLY BASILICAS

THE basilica type is that of the churches with nave and two aisles; or with two aisles on each side, making what we call a five-aisled church. This is the form most naturally employed by beginners in building, or by a poor community with but little opportunity to give money or thought to their sacred edifices. Thus, at Silchester in Hampshire an ancient church is still traceable among the vestiges of the Roman city. There remain the lower part



55—Plan of Roman church at Silchester (Hampshire), England: 42 feet long, relatively large narthex, having apse at west end. (Drawn by E. P. C. from Archæologia.)

of the walls built of rubble laid in mortar, with quoins of brick: exactly as practised in recent times, where the available stone is too hard or too brittle to be shaped without great cost. This ruin is undoubtedly of the Roman period in Britain, which ends with 410 A.D., and its plan is shown in Fig. 55.

A similar plan is found in North Africa, in a ruined church about

twice as large as was the Silchester building. The English basilica had its apse at the west end, as at S. Peter's metropolitan church in Rome—both the earlier and the later edifices. The African church was oriented in the more usual way.

The great hall at Shakka, given in Vol. I, p. 294, was not originally a church, but, in all probability, the chief room of a public palace,[1] and its ponderous building of cut stone results from the peculiar conditions of the building art in Syria. The hall at Tafha (Tafkha) is of almost precisely similar plan, but has been made complete as a Christian church by an eastern apse. Fig. 56 gives the plan of this church. It is constructed in the same manner as the Shakka building mentioned above, by means of screens of wall, each pierced with three arches, and standing parallel at intervals of about 8 feet, while the wall itself is more than 2 feet thick. The roof, then, is formed of a series of slabs of stone which rest upon these cross walls very nearly in the way in which the columned hall in Egypt was roofed, as described in Book I, Chapter III, in connection with the nearly complete temples of Edfu and Denderah.

56—Church at Tafha, Syria. (From De Vogüé.)

Fig. 57 shows this small church in its present ruined state; but it can be seen how the great arches which span the nave spring from dwarf piers on either side and carry each a solid wall which, in its turn, supports at top a row of stones forming corbels intended to diminish the unsupported span of the stone slabs which were destined to form the roof. One of the ceiling stones is seen in place. The scale of the whole is given by the human figure standing on a corbel with his back against the wall, but the depth to which the church floor is covered remains uncertain, nor have the explorers made that point clear.

It may be noted that the basilica type allows the walls which are built upon pillars and carry the roof to be set in either direction—lengthwise or athwart. In the west they are ranged along the nave and aisles, but they may cross them equally well. The wider nave and the narrower aisles may still be preserved.

The reason for their running across the nave and aisles, as at Shakka and Tafha, is the necessity of keeping the walls so near together

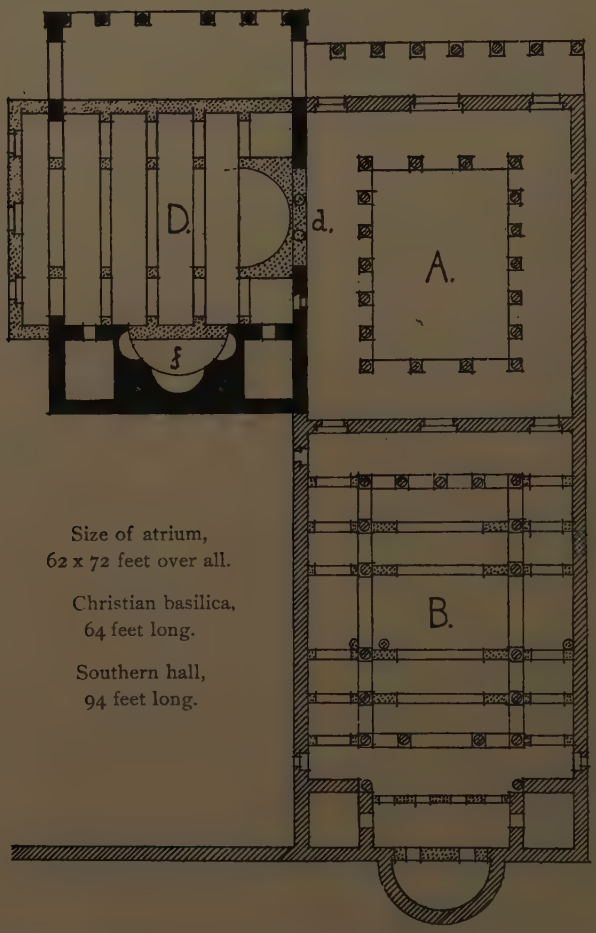
[1] See De Vogüé, La Syrie Centrale, Plate 8, for the general plan of distribution.

that a stone slab may span the distance between them: but the nave of a church is understood to require at least the 20 feet of width, more or less, which these two buildings offer. The moment the roof is decided on as of wood or as vaulted in masonry, it appears that the necessary width of the nave can be obtained with greater ease and simplicity by building the supporting walls lengthwise. The plan (Fig. 58) combines the two schemes in a most curious way, for the round columns are accepted by the Count De Vogüé and his architectural draughtsman, Mr. Duthoit, as having been of a classical building (second or third century A.D.), which building has been strengthened and roofed anew by the construction of cross walls on the system followed at Tafha and Shakka. This means that the Roman engineers, working with

57—Interior of church at Tafha, Syria. (From photo., Syrian Expedition.)

the resources of the Imperial governors of the East, were able to bring heavy timber to the site and to construct a basilica roof of the usual Roman type; and that the Christian congregation of the fourth century or fifth century had no such opportunities of securing wood fit for building and were compelled to resort to that system which was most easy to employ in Central Syria, costly and remote as it seems to the modern world. That building is at Kanawat (Qennouat), and there is no doubt that the smaller hall forming the "L" on the left is more ancient than the atrium and basilica which adjoin it on the east, and which have an axis running from north to south. On account of this absence of the usual orientation, Mr. Butler thinks that the building could not have been a church at any time, but may well have been

a hall connected with a monastery. It does not seem, however, that orientation was an absolute requirement in the fourth and fifth centuries. It is well known that custom in this matter has varied greatly, sometimes at short intervals of time. The important thing for us to



58—Plan of the buildings at Kanawat, Syria. *A*, atrium; *D*, the most ancient basilica, a civic building, lying nearly north and south, with an early Christian basilica built upon its site and lying east and west; *ƒ*, apse of the classic basilica; *B*, great southern hall, anciently roofed with timber carried on columns, afterward rebuilt with cross walls and great arches to carry roof of stone flags like the N. W. Hall; *d*, arcade, see Fig. 59. (From De Vogüé.)

note is the determination to have an atrium, a narthex, a nave and aisles, a transept-like cross-hall, and an apse; and to preserve this distribution even when it was necessary to build cross walls of heavy masonry to carry a stone roof.

Fig. 59 shows the western wall of the atrium with, on the left, two of the very strange columns which make up its peristyle. The plain round shafts consist of three drums, each of different length, and the lowermost drum rests upon a base cut so that the scotia or hollow moulding seems a mere prolongation of the shaft, swelling out like the apophyge of an Ionic shaft, but ending in a narrow fillet and a small torus. At top, all pretence at classical disposition is abandoned, and the plain cylinder stops abruptly against the under side of a square

59—Atrium at Kanawat (see Fig. 58). (From photo., Syrian Expedition.)

capital cut with a double splay and no other ornamentation whatever. The column made up in this unexampled fashion is set upon a low pedestal with base and surbase, each cut with a plain splay. The entablature resting upon these capitals has nearly perished, but it appears that the epistyle was wholly without decoration.

All this is undoubtedly of the Christian rebuilding in the fifth or sixth century, but the beautiful triple arcade shown in Fig. 59 and built into the east wall of the church (the west wall of the atrium) is not so easy to place chronologically. The bases of the short columns are nearly classical in their mouldings, but the whole upper part of the

column (that which replaces the capital in an accepted style) is unique, and though Greco-Roman in purity of treatment, is wholly non-classical in disposition. The abacus itself is sculptured at the edges; the echinus is cut with the egg-and-dart in the style of the Roman Doric, and below that is a gorge with vertical grooves alternating with larger hollow mouldings like the tops of channels—as if this had been the finish of a channelled shaft. Below this, the shaft is surrounded by a belt of acanthus leaves, each cut in simple relief upon the cylinder. The small side arches are built of plain voussoirs without projection, or moulding, but the central arch is moulded in such a way as to show a decided archivolt, the mouldings of which project beyond the abaci of the capitals which support them. This and other indications seem to point to the use, in this instance, of details removed from another building; but if that took place it is more than likely that further changes were wrought and that these stumpy columns were shaped out of some of more usual proportion. The abutment on either side

60—Plan of basilica at Suwêda, Syria, now destroyed. (From De Vogüé.)

where a mere moulded cap projects from the wall and receives the imposts of the arch, is a feature which was taken up by the Italians and used by them in Romanesque work from the ninth to the thirteenth century, to reappear again in the earlier Renaissance. In short, the whole triple arcade seems to be an excellent instance of that free-handed fashion of the earlier mediæval builders, of using every architectural idea which came their way, classical or non-classical; but always treated with a vigorous originality which made the details of the earlier work the property of the new builders.

The final changes in the Tafha group of buildings may be fixed,

approximately, near the close of the seventh century. At that time, basilicas of the more usual type were in process of construction. The church at Suwêda is given by De Vogüé (see Fig. 60), but it has been entirely destroyed in very recent years[3] to make room for a barracks. The trustworthy authority of De Vogüé and his advisers fixes the date no more closely than as of the fourth or fifth century A.D. The description is that of a most interesting building. Its total length was 223 feet and the nave was 42 feet wide from centre to centre of the columns.

61—Interior of church at Kalb Louzy, Syria. (From photo., Syrian Expedition.)

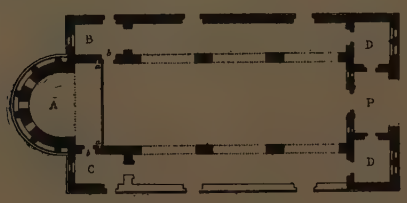
The building had lost its roof and was otherwise greatly ruined, even when surveyed by the De Vogüé expedition; but the fact that the aisle windows were 25 feet above the ground led those explorers to assume a considerable height for the interior. The church was exactly oriented and was complete with its narthex, apse, and two very narrow side apses which may have served as diaconicon and sacristy.

The church at Zorah, described in Chapter III of this Book, should be compared with these basilicas, because the construction in massive

[3] Architecture and Other Arts, being Part II of Expedition to Syria, by Howard Crosby Butler, A.M. P. 406.

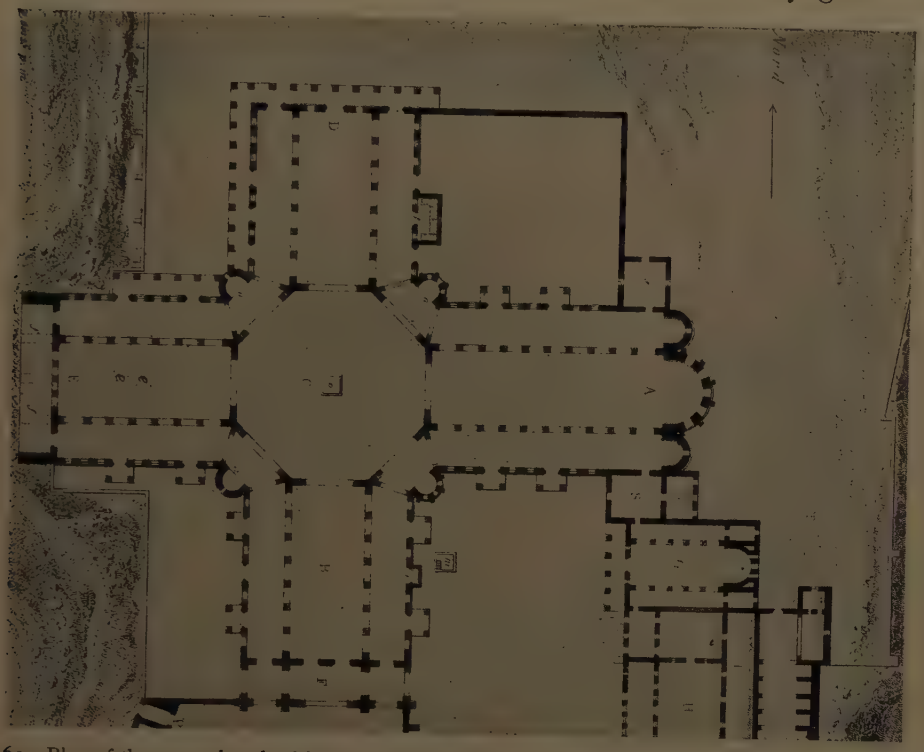
stone work is so very similar. The apse of the Zorah church is in all respects like a section of the basilica at Shakka, that at Tafha, or that at Kanawat in its rebuilding.

The church at Kalb Louzy (Qalb Louzeh) is shown in Fig. 61. This church, dated by sufficient evidence of style as of the sixth century, is of that basilica type which has to be considered at length, in connection with the Italian churches, those of Rome and its vicinity (see below, pp. 93, ff.) A nave and two aisles, forming three long and narrow halls side by side and separated from one another by long arcades, were roofed by rude wooden trusses. The remarkable piers which carry the arches are, on each side, only two in number, beside the responds. The clearstory windows are nearly square, and each of the piers which separate them carries a boldly projecting corbel, upon which once rested colonnettes carrying engaged supercapitals, the whole system thus forming an effective though non-classical constructional corbel (see De Vogüé, pl. 126.) These corbel-systems helped to carry the ends of the heavy trusses of timber. The nave lies east and west, with entrance at the west end and a half-round apse at the east end, as shown in the plan (Fig. 62). A very important arch, beautifully sculptured with delicate floral patterns, divides the apse from the nave, and the roof of the apse is a semidome, in this case built of cut stone. The basilica form is repeated in the great church of S. Simeon Stylites, at the place now called Kalat Siman. This, however, is of wholly exceptional treatment; it is a congeries of churches, as shown in the plan (Fig. 63). The pillar of S. Simeon, that upon the top of which he spent his latest years (until his death in 460 A.D.), stood in the centre of an open court, and four basilicas fronted upon this: their four fronts having each only the width of its nave, while the aisles opened into curious trapezoidal vestibules which brought the court to its regular octagonal form. The eastern arm of the cross is made the most important by having as its eastern end the three apses which mark the locality of the choir and sanctuary. As, however, the western arm is built out over the edge of a steep declivity, no important entrance could be managed there, and the portico (*f f*) is of the nature of a balcony, commanding a



62—Plan of church at Kalb Louzy (see Fig. 61). (From De Vogüé.)

view over the valley. The entrance to the convent, then, is at *F*, where the irregular outer court gives access to the whole series of conventual buildings, and another entrance is at *D*; but there are ten pillared porches in the flanks here and there, and doorways in other places—in fact, the whole convent being carefully guarded

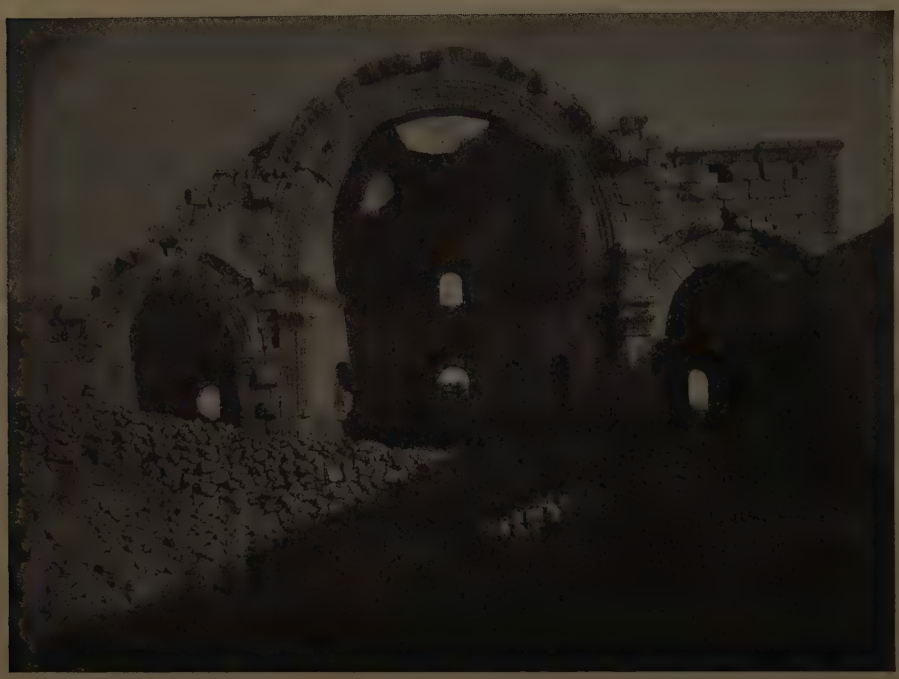


63—Plan of the great church of S. Simeon Stylites, Kalat Siman, Syria. *A*, eastern basilica, with three apses (see Figs. 64, 65) and the sanctuary; *B*, southern basilica; *C*, place of pillar of S. Simeon, in court open to sky; *D*, northern basilica; *E*, western basilica; *F*, principal doorways (see Fig. 67), and exonarthex; *ee*, substructure, and *ff*, buttresses, supporting the west end on the steep side of the mountain; *S*, great sacristy; *G*, chapel; *H*, a hall of the convent; *m*, open-air pulpit. (From De Vogüé.)

against unlicensed visits, the access to the church was made very free to the monks.

Fig. 64 gives the three apses as seen from within the church, the archivolts more richly moulded than that of Kalb Louzy and having therefore a less elaborate floral ornamentation. A vestige of classic design is seen in the impost of the great arch with a cornice superimposed upon a fluted frieze. Fig. 65 is the exterior of that eastern end as drawn by Duthoit for the De Vogüé book. Corinthian colonnettes are used alternately with corbels to carry a wall-cornice of very medi-

æval look. Concerning this apse Mr. Butler [4] says that it is more absolutely Romanesque than other parts of the building, and one accepts that verdict in view of the entirely mediæval treatment of the wall-cornice, as combined with the columns which serve as buttress-piers. The mere superimposition of those columns is not more non-classical than are their slightly modified Corinthian capitals; but the wall-cornice, in which a corona of mouldings and dentils of wholly informal style completes a projecting piece of wall, is entirely independent of the



64—Interior of eastern end of eastern basilica at Kalat Siman (see Fig. 63). (From photo., Syrian Expedition.)

Greco-Roman influence. The small windows of the minor apses and of the upper story are in the Syrian style of the second century, but the newer influence is seen in the larger windows which, though built with round arches in a curved wall, are elaborately moulded. The capitals themselves are so graceful in design that they may well have been taken from a building of the first or second century A.D.

The octagonal court (Fig. 66) is faced by an arcade of great variety and interest. It has only one arched opening to each side of the polygon, but the deep archivolts, very richly moulded and sculptured with

[4] Butler: Architecture and Other Arts.

delicate details, rest upon imposts of singular charm, and through these open arches the corner vestibules are seen, with their system of three arches to each; two arches opening into the aisles of the basilicas and the third between them into the curious half-round niche or shrine or chapel (*a*). It is most unfortunate for our study that the superstructure which once rested upon these great arches has entirely disappeared. Nowhere do we trace the completion, at top, of the wall enclosing the octagonal court.

The southern front, with the principal doorways, shown in Fig. 67, partly explains the treatment of the court-yard. In that southern

65—Exterior of apses of church at Kalat Siman (see Figs. 63 and 64). (De Vogüé's plate, from "European Architecture.")

front we see a strong tendency toward preserving a classical proportion in the three pediments, which, however, are the obvious and inevitable gables corresponding with the double-pitched roofs of nave and aisle—in this respect corresponding to the pediment of the purely classical Grecian temple. The mediæval indifference to formulæ is seen in the bold carrying up of the large arch into the triangular space of the pediment and the suppression of its geison, while above each of the two side entrances the pediment is complete with its cornice above and below.

The enriched archivolt of the larger doorway is another marked peculiarity. Asiatic taste and the desire to leave no important detail without its share of sculptured adornment, are visible in this correspondence of the entrance doorway with the great arches within the church. The impost course, too, is carved with leafage of almost Corinthian character as if a continuous capital; another evidence of the early rejection of Greco-Roman tradition.

The starting of the archivolt from the capitals of free columns (see Vol. I, pp. 365 ff.) was so entirely to the taste of the sixth-century builders that they were at pains to stop the solid wall two feet short of the actual jamb and to replace that removed pier or parastas by a free column. This is not, however, in all respects a mediæval innovation; the use of the great vaulting shafts as seen in Fig. 297 of Vol. I is nearly similar, and

66—Part of the octagonal court at Kalat Siman (see Fig. 63). (From photo., Syrian Expedition.)

this use is explained more fully by the photograph (Fig. 299), where the restoration by Michelangelo follows closely the ordonnance of Diocletian's time. It is suggested in either case by the desire to give to a great arched opening a special dignity, and at the same time to soften the angles of the pier which carry it, avoiding a sharp right angle. Fig. 286 in the same volume gives an instance of the raising of the entabla-

ture itself into the archivolt of a semicircular arch, and this is shown complete in the engraving of the portico (Fig. 287).

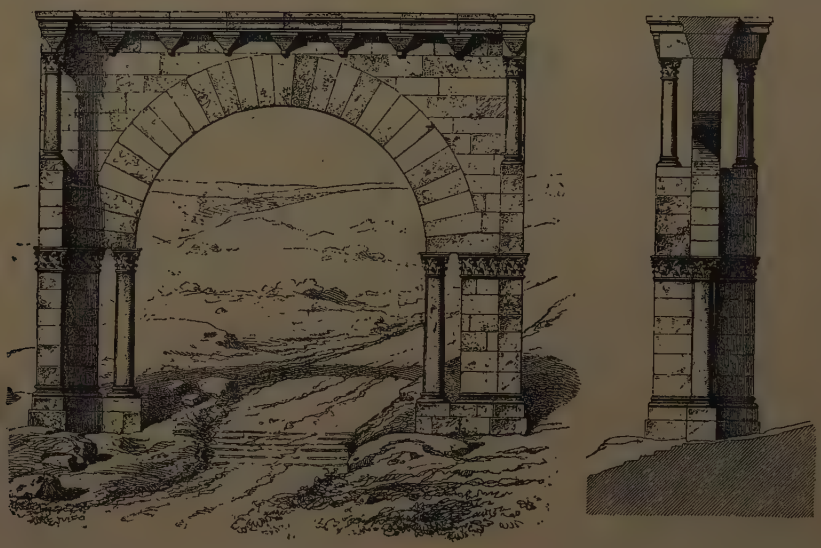
The arch, apparently a memorial structure, at Deir Siman, given in Fig. 68, as restored by Mr. Duthoit for De Vogüé's work, shows the same use of the free column. This most interesting arch should be compared with those given in Vol. I (Figs. 230, 232, and 233). Nothing

67—Southern front of southern basilica at Kalat Siman (see Fig. 63). (From photo., Syrian Expedition.)

but its late date and the beginning of mediæval design separates this from the simpler of the arches shown in that chapter. The restoration seems entirely justifiable, for Mr. Butler's book, cited above, contains a photograph of the remaining pier—about one-third of the whole structure—standing uninjured. The curious treatment of the rather thin wall (2 feet 4 inches thick), made weaker by the relatively immense span of the arch, is seen to be effected by two buttresses at each end which at once strengthen and dignify the whole. The buttresses give to the plan of each end-pier the general shape of a T; but in the upper story, where the weight of the buttresses is no longer needed, this massive wall is replaced by free columns of smaller size.

The solid stone building of the Hauran has preserved for us the

smaller dwellings in some of the villages, in a surprising way; one of these (see Fig. 69), given in De Vogüé's book, being selected chiefly because it bears an unmistakable date in a long Greek inscription incised upon one of the panels of the balustrade. This date is turned into modern English as the 13th of August, 510 A.D. The curious treatment of the architrave, which is bent downward at each corner of the square opening, exactly as in modern neo-Roman work, but which is finished then by a boss brought into being through the turning up into



68—Memorial arch at Deir Siman, Syria. Drawn by Duthoit for De Vogüé. (From Eu. A.)

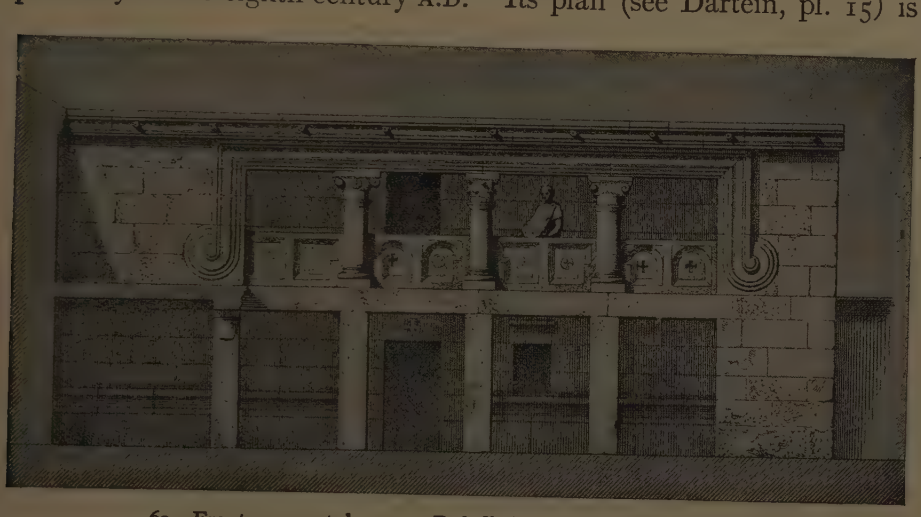
a scroll of the mouldings of the architrave itself, may be noticed in several of the buildings given by De Vogüé. Its immediate origin or connection with other styles is not clear; but it prevails throughout this Syrian Romanesque. Apart from this the chief comment that one is led to make upon the design is as to its external simplicity and directness, every stone doing its obvious duty, every detail showing the natural treatment of a constructive member in the composition which it occupies. Other houses of the neighbouring villages and of similar date are given by De Vogüé, and in the photographs of Mr. Butler's folio.

The little basilica whose foundation and floor were found in the excavations for the new town of Orléansville in Algeria was 48 feet wide by 71 feet long between the walls, and floored by an elaborate mosaic which is mainly in good preservation. This mosaic is dated 325 A.D.

Small as it was, it was a five-aisled church, and there were two apses, one at either end of the nave, included within the rectangular walls. Little is known or can be inferred concerning the superstructure.

The church of S. Agostino del Crocifisso at Spoleto in central Italy was a basilica with classical columns used to separate the nave and aisles. It has been much altered; but the late mediæval rebuilding has left the classical ordonnance of the chancel. In this a very curious Roman Doric frieze rests upon Corinthian columns, while the grouped columns of the crossing which serve to carry the dome are Ionic, taken, like the Corinthian columns, from an ancient temple. (See Huebsch, Pl. VI.) The west front of this church, although of almost equal antiquity, is evidently an addition and not a fortunate one—the classical fragments being used with but little intelligence.

The church of the Saviour at Brescia is of the earliest period, probably of the eighth century A.D. Its plan (see Dartein, pl. 15) is



69—Front on court, house at Refadi, Syria. (From De Vogüé.)

of basilican type, with seven antique columns still standing on each side of the nave, and the present western wall built across it, in such a way as to suggest a greater length in former times. The very interesting crypt is vaulted in the strictly Byzantine style beneath the floor of the nave; but where it is carried out eastward and rises beyond the east wall of the church and beneath the pavement of the apse, the roof, forming the sanctuary floor, is a flat layer of large stones, supported on arched construction with cross walls in the Syrian fashion.

The church of Civate, in north Italy, on the railway line between

Lecco and Como, was certainly built during the existence of the Lombard kingdom founded in the sixth century. The church is now approached by a flight of stairs carried through a doorway at the east end. There is a western apse, which is used as the choir; but the careful study made by F. De Dartein leads to the conclusion that this apse is of much later date, and that the church originally had a square west end, with the apse above a crypt at the east end.

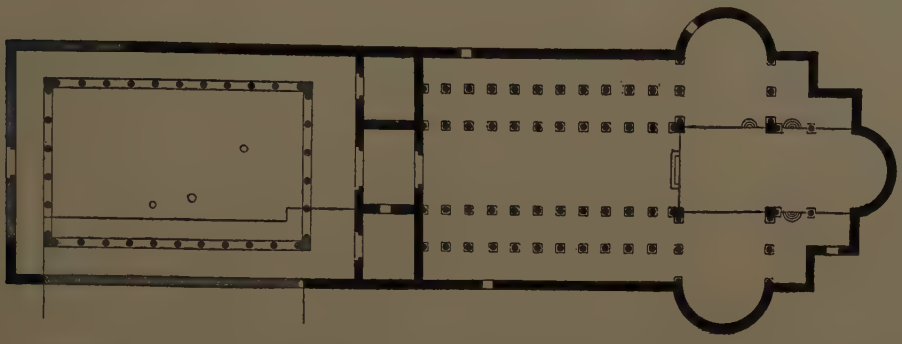
Such very small churches must have been scattered over Europe even before the time of Constantine (master of the Roman world A.D. 323–337); and they became still more numerous after the establishment of Christianity as the accepted religion of the State. With the movement of the populations in the fifth and sixth centuries and the con-

70—Interior of basilica at Bethlehem, Palestine. (Drawn from photo., by E. P. C.)

sequent disturbance of the Roman Peace, the building of churches nearly ceased for two centuries or more; but it began again in the north with more vigour during the brief period of comparative prosperity at the close of the eighth and the beginning of the ninth century.

Fig. 70 is the interior of the basilica at Bethlehem, properly the church of S. Mary, but often called the church of the Nativity because

there is, in a crypt beneath the main floor, what is said to be the place of the actual birth of Christ. This basilica was undoubtedly built, in the first place, in the time of Constantine, and repaired under Justinian (527–565), in whose time it was made into a rather extensive basilica with a large atrium. That forecourt has been destroyed, but many

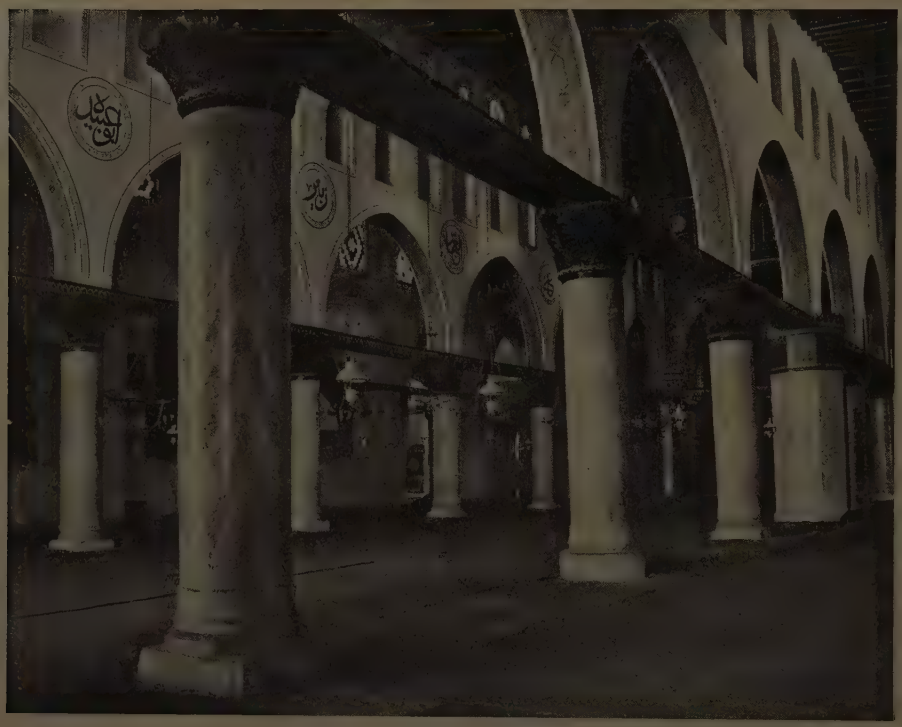


71—Restored plan, basilica of S. Mary at Bethlehem, called also Church of the Nativity (see Fig. 70). (From Églises T. S.)

traces of it remain and seem to justify the restored plan. The original plan as given by De Vogüé, with the atrium restored, is shown in Fig. 71.[5] The view of the church (Fig. 70) shows the partition built for the service of the church by the Greek monks since 1850. This partition hides the true relations of the transept to the nave and aisles, but an unaltered nave remains, and the colonnades of the side aisles are as they were in the fourth century. Monolithic columns about 20 feet high carry long lintel courses upon which rest the beams of the flat ceiling over the aisles: and the row of nave columns on either side carries also the high clearstory wall with its much injured eleventh-century mosaics and the windows in the uppermost story of the flat wall. The eight columns seen on the left in Fig. 70 are all but two of the free columns in the nave-colonnade on that side. The ninth shaft is engaged in a pier, corresponding to one on the right: these being two of the four piers which mark the crossing of the transept. This transept can be located on the plan by the two apses on the north and south sides, which form the two ends of that transept; but its roof does not rise above the roof of the main church, and in this way it differs from the great Roman churches, such as S. Paul without the Walls and S. John Lateran. Beyond the transept, toward the east end, the aisles seem to repeat them-

[5] The plan with modern partitions, as now existing, is given with great care in the Baedeker guide, Palestine and Syria (3d edition, 1898).

selves, the nave leading on to the middle apse and the two inner and two outer aisles having each its own culminating feature in the plan. The whole church, from the western doorway to the interior of the semi-circular apse, is 186 feet long. Westward from the western doorway is the narthex, which has been divided by partitions into three separate rooms, and which is bare and unadorned. The atrium has almost wholly disappeared, but the heavily shaded parts of the plan show

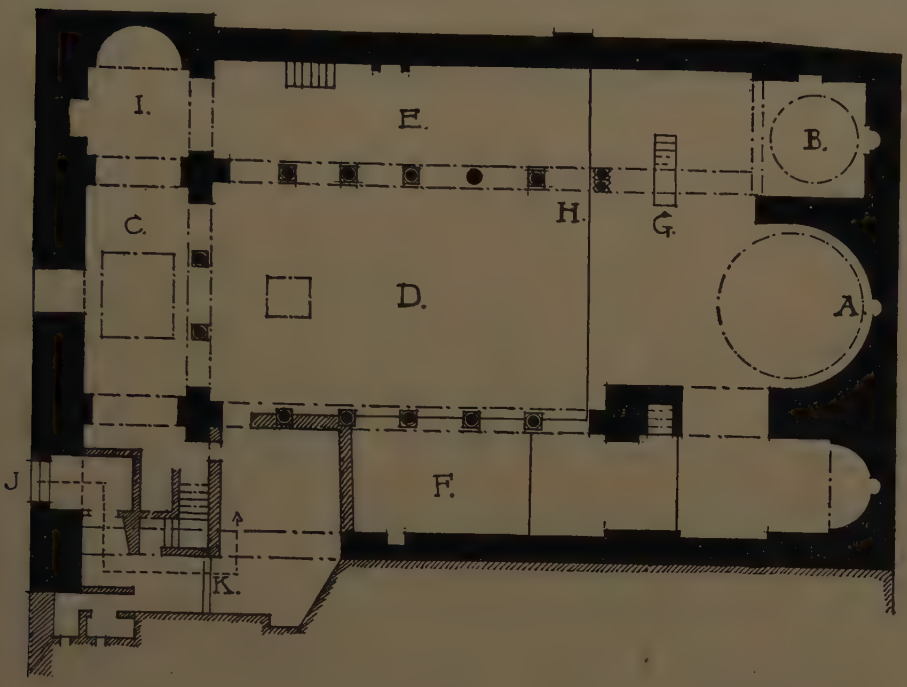


72—Interior of Mosque El Aksa, Jerusalem. (From photo.)

where the outer walls are still traceable and where at least three columns of the peristyle can be found.

The Mosque El Aksa at Jerusalem is a Christian basilica of very early times, to which additions have been made. It is contemporary with the present Sancta Sophia at Constantinople. The plan is now that of a seven-aisled mosque, for the general description of which see Book VIII, Chapters I and II. Only the nave and its adjoining aisles and the transept can be called basilican; and these can be distinguished immediately by their greater height, and by their wooden roofs with relatively steep slopes, contrasting with the flat roofs of masonry

of the Moslem constructions. Fig. 72 gives the nave, of which the two arcades are seen, with heavy cylindrical shafts and delicately carved capitals. The arches are slightly pointed; but this can hardly be the work of the sixth century, and whether the present form is the result of a rebuilding under the Moslem influence or of mere modern plastering is uncertain. At the southern end of the nave a cupola



73—Plan of church of Abu Sargah, Old Cairo. (Drawn by E. P. C. from "Ancient Coptic Churches of Egypt.")

A. Principal apse covered by a cupola; place of bishop's throne and seats of clergy. *B*. Subsidiary apse, also roofed by a cupola, and having permanent seats for the clergy. *C*. Great narthex, two stories high, having a tank for water in ground story. *D*. Nave. *E*. North aisle. *F*. South aisle. The solid lines crossing the nave and aisles are steps, by which the floor is raised as we go eastward and toward the choir. *G*. Stairs down to crypt. *H*. Place of the modern pulpit. *I*. Chapel with floor three feet above that of nave. *J*. Door by which one descends into church. *K*. Descent of two steps.

marks the crossing of the transept, but it is not certain that this is of a time previous to the Moslem rebuilding.

The churches built in Egypt after the Moslem conquest, beginning 638 A.D., are known as Coptic churches, that racial name being applied to all native Christians. Most of those which remain are within the bounding walls of convents in the open country, but a few are in Cairo

and six are within the walls of the ancient Roman fortress called Babylon, which is included in Old Cairo. Fig. 73 gives the ground plan of the church of Abu Sargah, a name equivalent to the Hagios Sergios (Saint Sergius) of Constantinople. This church is built of small hard bricks, with timbers built into the walls as stiffeners.

In these Egyptian churches the orientation is that of Europe, the altar at the east end; and a cupola is commonly found above the place reserved for the altar. This, however, in most cases, is the only cupola. In Abu Sargah there is another over the north aisle at the east end.

The Byzantine system of a central dome, and the Franco-Byzantine plan of a series of domes, are not known to have been used in Egypt. The Coptic type of church may be considered as the basilica with a cupola at the east end, nearly as the French Romanesque churches described in Book IX are basilicas with a tower over the sanctuary. It is a noble conception, capable of the highest artistic results; and it is to be regretted that the cruciform plan prevailed with the architects of the thirteenth century so absolutely as to exclude this plan from the Gothic style. From that plan were derived, however, the triapsal plans of The Holy Apostles of Cologne, and S. Mary of the Flower, the cathedral church of Florence.

In these churches of Egypt the pointed arch is constantly found in use for the nave arcades. A common form of the nave arcade is this —classical columns of very miscellaneous sizes and styles carry a heavy timber epistyle, serving as a tie. Above this rise open arches, two-centred and pointed rather obtusely, as shown in Fig. 72, where, however, the columns are of Christian Byzantine epoch.

This resort to the pointed arch is the obvious and natural device of an arch-building people. It seems as strange that the Etruscans never used it as it is strange that the Etruscans alone, in European antiquity, used the arch of any form in monumental building. The roofs of Lycian tombs (see Fig 75, Vol. I) suggest the use of this form in early timber building, which was copied by the stone-cutters. Again, the corbelled vaults of tombs and passages (see Figs. 82, 84, Vol. I) assume the same form, and some Egyptian brick drains are built with a two-centred arch—in some cases with radiating joints. There is properly no keystone in the pointed arch: the top of the triangle is a vertical joint, not a stone cut as a voussoir. This is a very strong form of arch, but requires more height in proportion to width than

other forms. From the Coptic churches its use passed into the earliest forms of the mosque, as seen in Fig. 183, Mosque of Ibn Tuloun.

The capital of the East, the centre of the Byzantine architecture to be, had also its simple basilica of pure Latin form. This is the church of S. John, now the mosque Mir Achor.[6] This simple little building is generally ascribed to the fourth century A.D. The disposition of columns is in two rows, the upper and smaller columns carrying

74—Interior of chapel at Cividale. (Drawn, with some errors in proportion, by Albert Lenoir for Gail., Monuments.)

round arches pierced in a plain wall. The roofs are modern, but they certainly replace timber construction of the simplest form. It is probable that there was a clearstory high enough to give a row of windows above the aisle roof, which clearstory has disappeared, the church being now covered with one double-pitched roof. The details of this church are extremely severe, as befits its early date. We have here very nearly

[6] See D. Pulgher, Les Anciennes Églises Byzantines de Constantinople.

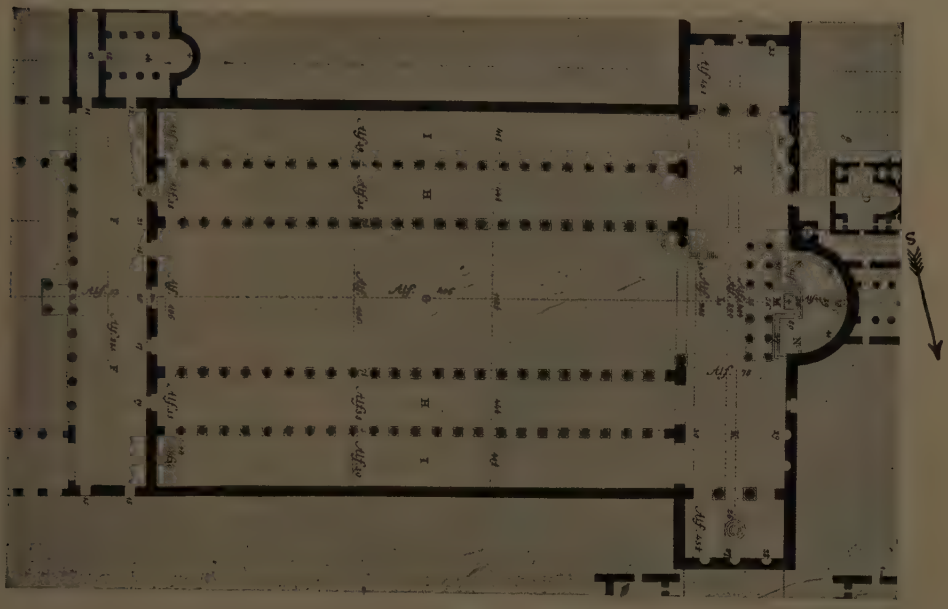
a church of Constantine's own period; one of the simpler basilicas which must have been built in haste when the Christian church became a power in the land. These basilicas are not very different in style from those of Italy and the West generally. It is in the West that this basilica plan with the sanctuary at the east end was destined to develop itself into a great and long-enduring style, while in the East the domical building with central sanctuary was readily accepted by Christians as the proper form for a place of worship of any importance.

75—Portrait statue from chapel at Cividale (see Fig. 74). (From Gail., Monuments.)

At Cividale in Friuli, north-east of Venice, is a curious chapel which has excited very eager controversy. Its general aspect is best shown in a drawing made by Albert Lenoir (see Fig. 74). The square-groined vault has been thought to be a relic of Roman imperial time, but if so it is merely one section of a large building otherwise destroyed. The chapel is about 20 by 38 feet in extent, rather more than half being roofed by this groined vault and serving as the nave, while the chancel of the little sanctuary is roofed with three parallel tunnel vaults supported on Corinthian columns. In the picture the spectator is looking from the altar toward the door of entrance. Above this door is the elaborate hood in the form of an arch with richly carved archivolt resting upon sculptured imposts, and above this again is the curious band of figures, life-size or larger, which, with the ornamentation of the arch, are executed in stucco. Fig. 75 gives one of these figures on a large scale, and the costume is evi-

dently related to the dress recognized as common to the court of Constantinople in the sixth century. The costume of these figures, together with a record preserved at Friuli, leaves little doubt that the building was erected in the seventh century, or at least completed then, from remains of a more ancient structure.

The western type of basilica includes in its complete system a transept, usually of especial importance and dominating the church by its height and mass. The great basilica of S. Peter at Rome, built between 324 and 330 A.D., and destroyed in the sixteenth century to make room for the present church of S. Pietro in Vaticano; that of



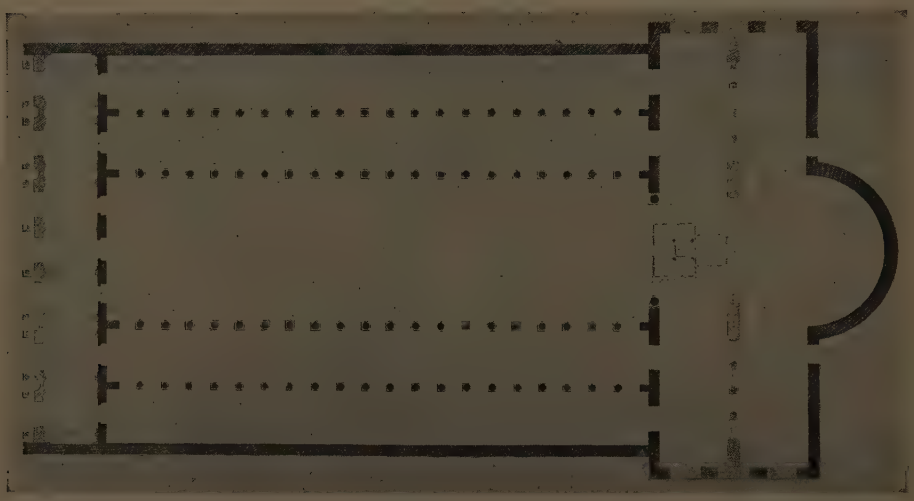
76—Ancient basilica of S. Peter's, Rome; the plan as preserved when the modern church was undertaken. The church is reversed in orientation with the apse and sanctuary turned westward. Alf. and the figures refer to the measurements of Alfarano. (From Bunsen.)

F. Western ambulatory of atrium serving as narthex. *G*. Nave. *H*, *I*, Aisles. *K*. Transept. *L*. Place of choir. *M*. Presbytery and high altar. *N*. Seats for bishop and clergy.

S. Paul without the Walls, burned in 1823 and rebuilt nearly on the old plan; that of S. John Lateran, begun in 324, and perhaps the earliest of all to take permament form—were built each with a transept of this sort. The plan of S. Peter's basilica is given in Fig. 76. The nave was roofed with a low gable of the usual form, and the aisles (two on each side of the nave) with a pent-house roof on each side of the clear-story; these three separate roofs, with the clearstory walls separating

them, were all seen to stop against the high vertical wall of the transept, which crossed them from north to south.

This church was not removed, nor was it altered in any important respect until the time of beginning the great modern church on the same site. Plans and measurements of the original church were then preserved: they are admitted to be trustworthy; it is from these that the Bunsen plan reproduced in Fig. 76 was made. The scale of the church was very great. The width between the two colonnades of the nave was much over 70 feet, and the aisles each about 26 feet wide in the clear; these five broad halls having an aggregate width of over 200 feet between the outer walls of the church. It was peculiar in having



77—Basilica of S. Paul without the Walls of Rome, plan nearly as before the fire of 1823. (From Bunsen.)

the sanctuary at the western end, thus deviating from the more common methods of orientation. The transept was a singularly unbroken hall 200 feet from north to south and about 54 feet wide; and added to it at either end was a hall, 54 feet by 30, approximately, which was divided from the transept proper by a pair of columns, as a portico distyle in antis. One of these halls, that at the northern end, was used from early times as a baptistery. At the other end of this hall a gallery led into a pair of rotundas, the church of S. Andrea and the tomb of Pope Honorius, round domical halls closely connected by a passageway. These two rotundas were supposed to have occupied the site of the *spinæ* of Nero's circus; that is, the raised goals or turning points, large and showy structures of masonry which in this case were alleged to

have been the exact places of martyrdom. In the case of S. Paul without the Walls, (see the plan, Fig. 77,) we may take the original height of the nave, before the conflagration, as 120 feet to the ridge of the double-pitch roof, and we may imagine the transept as of the same height in the original walls alone.

Most of the western churches were without this feature of the higher and very prominent transept; and therefore we cannot assert that the transept was in any special way given over to the occupation of the clergy. The apse projecting beyond the transept, when it existed, or from the nave, when there was no prominent transept crossing the whole width of the church, was indeed the place for the bishop's chair and the seats of the clergy on either side; but the choir or reserved space appropriated for the clergy who conducted divine service was not necessarily in one or another division of the church, so long as it was at the head or upper end of the church—the end farthest from the great doors of entrance, from the narthex and the atrium. With the usual system of orientation this would be the eastern end, and accordingly the high altar with its canopy, and the confessio or reliquary crypt below, would be kept at the eastern end of the nave, either in the nave itself or in the transept, and the place reserved for the clergy would be in its immediate neighbourhood.[7]

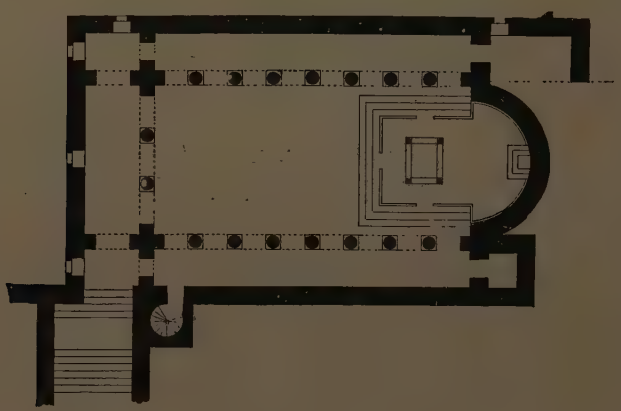
The smaller basilicas of Rome are well exemplified by S. Agnese beyond the Walls. The church was built in its present form before 514 A.D. Its floor is much below the level of the high road (Via Nomen-

[7] The choir is usually the place for the choristers, those who conduct the chanted service. The chancel is properly the railing or wall which surrounds the sacred enclosure, and in the second meaning it denotes that enclosure itself, which in some cases includes the choir, and in others is considered apart from the choir and more sacred than it, being reserved nearer the east end and the high altar. Sanctuary is a term used only where the altar occupies a space set apart from the choir and chancel, or it may be synonymous with chancel in the case where that division is separate from the choir. The meaning of the term is, of course, the most sacred part of the church, and wherever the altar is and the sacrifice of the mass is performed, is the sanctuary.

The term choir has two very definite meanings in connection with mediæval architecture. The first and original meaning is the one given above; but also it signifies, in a cruciform building, that arm of the cross which contains the sacred and reserved parts of the interior, and which generally extends toward the east. Thus, a cathedral or a large Gothic church has four arms of approximately equal size and dignity; the nave, which reaches from the crossing westward; the north and south arms of the transept, and the choir, which stretches eastward from the crossing. The term nave also has two meanings, (1) as explained above, (2) the high nave between two aisles and with a clearstory above their roofs.

tana) which passes near, and it is said that this was laid deliberately at the level of the martyr's grave. Fig. 78 is the general plan of this church: the steps leading down to the narthex from the main entrance. Fig. 79 shows the interior from the level of the gallery floor, which is unusually high—on a level with the springing of the triumphal arch. This gallery extends around three sides of the church. The antique shafts, of many patterns, carry Corinthian capitals which do not always agree with them in size. The mosaic which fills the semidome of the apse is of the seventh century, but has suffered somewhat from repair; but all the paintings of the walls are modern. The bishop's throne is hidden by the high altar and its ciborium.

A curious double church is that now known as S. Lorenzo beyond the Walls. The choir with its galleries still remains as it was put into



78—Plan of S. Agnese on Via Nomentana, N. E. of Rome.

shape in the sixth century, but the long nave was rebuilt in the thirteenth century and is partly built up of fragments taken from buildings of the imperial epoch. Two churches stood apse to apse with a small space between them, and nearly on the same axis; the larger one was dedicated to the Virgin, and was known as *Santa Maria presso San Lorenzo* until a much later period. When the two apses were destroyed and the two churches joined, a part of the great west wall of the eastern basilica was preserved, and the triumphal arch is still in place, as seen in Fig. 83.

Fig. 80 gives the changed plan of the basilica of S. Lorenzo and two bays of the church of S. Mary. This was a basilica of the ordinary type, a long colonnade on either side carrying the clearstory wall of the nave without arches, as shown in the section (Fig. 82). Fig. 81 is the

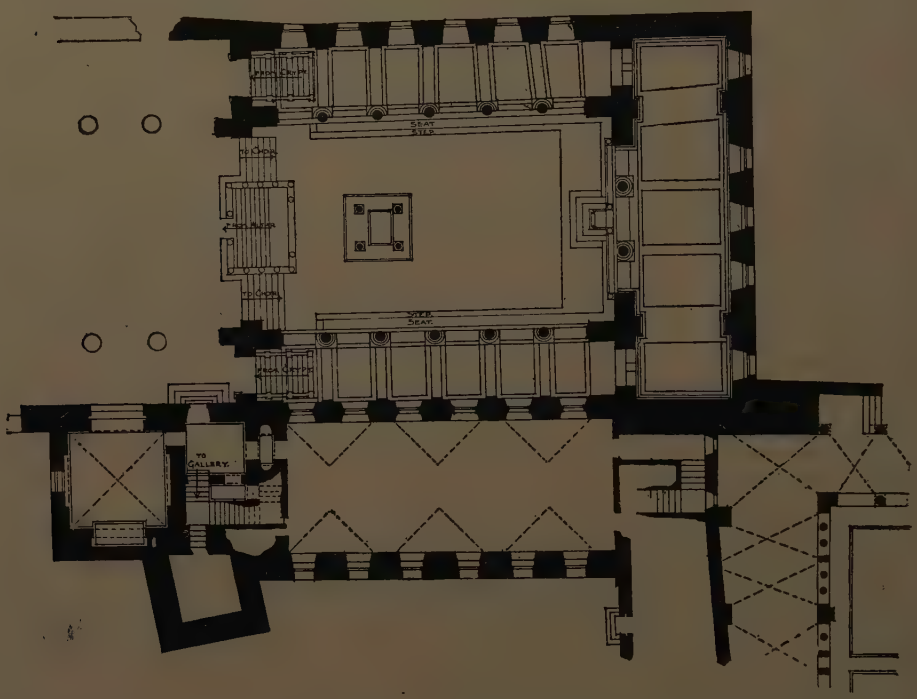
plan of the gallery of the original church of S. Lorenzo. The section (Fig. 82) shows this as a two-story building, with the addition of a space for the choir proper, raised above a crypt, and occupying the centre of the chancel. Beyond this raised platform is seen the upper portion of the lower colonnade, above which rise the columns of the upper tier with arches carrying the clearstory wall of this smaller and more elaborate church. The arrangement of this church seems to be a reminiscence of the ancient distribution found in the east: the floor for

79—Interior of S. Agnese (see Fig. 78). (From photo.)

men, and the galleries for women. The retention of this feature in the plan of the double church at Rome suggests the use of all that part eastward of the triumphal arch for the faithful only: while the nave was left for the catechumens, and the aisles were free for processions. Fig. 83 is a view of the interior looking eastward, and the galleries can be seen, though dimly, to front the choir on three sides. The great baldachino stands near the western edge of the raised floor of the choir; and this, with the altar which it covers, is enclosed in a special way, with a separate flight of stairs leading to it, while the stairs at either side lead to that raised floor outside of the rails. The nave,

then, is in the front of the photograph, with long rows of rough stone columns of very unequal diameter, of which the shafts are, no doubt, antique; while the capitals are of the thirteenth century, closely imitating late Roman work. The wall above the entablature and the wooden roof have all been painted elaborately in very recent times. The mural paintings are of much interest and importance, but are out of character with the church.

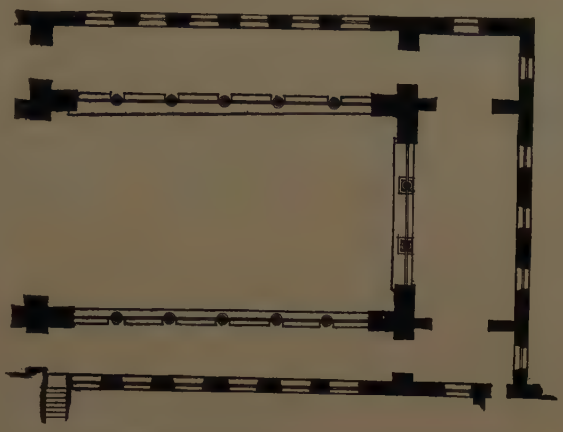
Fig. 84 shows the exterior of S. Lorenzo as it now stands, with the monument to the saint in front, put up by Pius IX (pope 1846–



80—Plan of choir of S. Lorenzo, on the road to Tivoli, near Rome; retaining much of the early basilica of S. Lorenzo. (Drawn by E. P. C. from print, after A. W. Lord.)

1878). The high retaining wall on the left, with massive pierced parapet, encloses a great cemetery. The front of the church above the open porch is much altered by repeated paintings in modern times, and it is possible that the splayed cornice has also been restored; but the disposition of the bare wall, with three simple windows corresponding exactly to the long rows of windows in the clearstory of the south flank, is entirely authentic as of the earliest arrangement of the church, that is, of the old basilica of S. Mary. Of the earliest style is also the

disposition of the narthex—the porch—which in this case is entirely open to the weather, with a portico of six Ionic columns with shafts taken from more ancient buildings—three of the shafts reeded with a spiral turning from right to left as it ascends, while on the other side are two others, each fluted spirally in the reverse direction, and one smooth and cylindrical. The capitals are rather fine, having a Grecian look about them. The main thing to interest the student is the well-expressed arrangement of the basilica as a rectangular brick box built around the needed architectural ordonnance within, and showing no exterior architectural effect other than the narthex at the west end, which itself is as plain a covered portico as could be devised. This narthex is known to be of the thirteenth century: but it may be considered as not unlike the porches of the earlier basilicas.



81—Plan of gallery (see Fig. 80). (Drawn by E. P. C.)

82—Longitudinal section (see Fig. 80). (Drawn by E. P. C.)

The church of S. Giovanni in Laterano was built in the fourth century, and in that case the plan of the church remains the same, but

83—Interior of S. Lorenzo as it has been since 1216; the basilica of S. Maria, with the old church of S. Lorenzo in the distance (see Fig. 80). (From photo.)

84—Exterior of S. Lorenzo; west end of primitive basilica of S. Maria (see Fig. 83). (From photo.)

the columns have been enclosed by masonry piers, and the interior entirely remodelled in the neo-classic style of the seventeenth century. Fig. 85 is a view of the original disposition of the interior, as conjecturally restored by Gutensohn and Knapp for the great work of Bunsen.[8] In this very early church the open space between every two columns is spanned by a round arch. The great scale of the building made it altogether advisable to build in this way, for the intercolumniations are of about 10 feet—too great to risk a lintel in carrying so

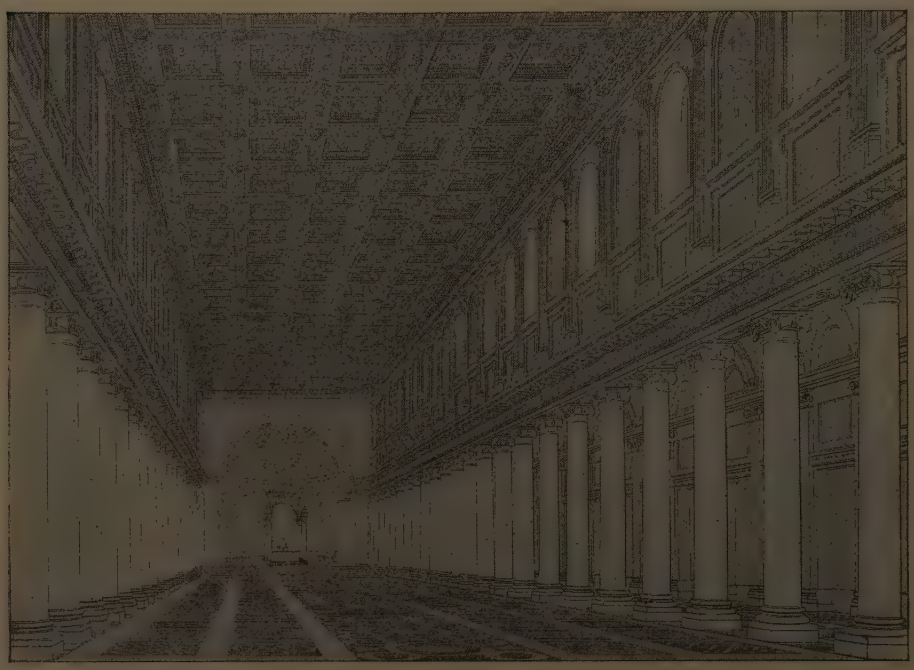
85—Interior of S. John Lateran, Rome, looking eastward; as rebuilt in the fourteenth century, on the old plan. (From Bunsen.)

high a superimposed wall, when no skilled builders were to be had and when the traditions of careful masonry and stone-setting were in great measure lost.

The church of S. Maria Maggiore in Rome is a more typical instance of the early basilica, for in this, while the width of the nave is great (about 55 feet in the clear) the intercolumniations are only 7 feet approximately, and it was found possible to carry the whole wall of the

[8] Beschreibung der Stadt Rom: 1830–43.

nave upon lintels. The columns, too, were either cut especially for the church or they were obtained from some very extensive ancient portico, allowing of their being all alike, or nearly so. The plan of this great church, as given by Gutensohn and Knapp, has been preserved, except for the opening up of a wider intercolumniation on either side of the nave near the high altar. These wide spaces are spanned by high



86—Interior of S. Maria Maggiore, Rome, looking eastward, as restored in the seventeenth century, but ignoring the arches which now interrupt the colonnades near the east end. (From Bunsen.)

round arches, destroying the intended repetition, the calculated monotony of the equal spaces, with equal supports. This ruinous change was made merely to produce a more grandiose and a more noticeable entrance, first on the south side to the newly built chapel of Pope Sixtus V (ca. 1585) and later to the Capella Borghese (Paul V, in 1611) directly opposite. At the time of the Classicismo and perhaps under Paul V, the very fine pilasters were set in the clearstory wall, and the deeply coffered panelled ceiling was hung from the tie-beams, as shown in Fig. 86. It is probable that this preserves for us the general disposition of the more prosperous early churches: for the richly adorned ceiling is mentioned in early records of different basilicas, and moreover the

generally classical character, as of a Roman interior, was helped by such an interior roof. But in the Lateran (see Fig. 85), as in S. Lorenzo, the actual roof itself was seen, with tie-beams of heavy timber, with bearing blocks to help support them, and with a queen-post framing for each truss. This form of truss is evidently much later than the original building of the church; for there can be no doubt that the original roofs was as devoid of such scientific framing as that most commonly used by the Roman engineers, who were satisfied with heavy

87—Exterior of S. Giorgio in Velabro, Rome, south front, with narthex of ninth century and later campanile. (From photo.)

timber which they used very nearly as blocks and beams of stone might be used, and hardly undertook the building of trusses.

The smaller basilicas of Rome contain more unaltered work of the time before the ninth century than the great churches just named. Thus, S. Giorgio in Velabro has even an exterior which may be thought to date from the eighth century, in the sense that it has been rebuilt

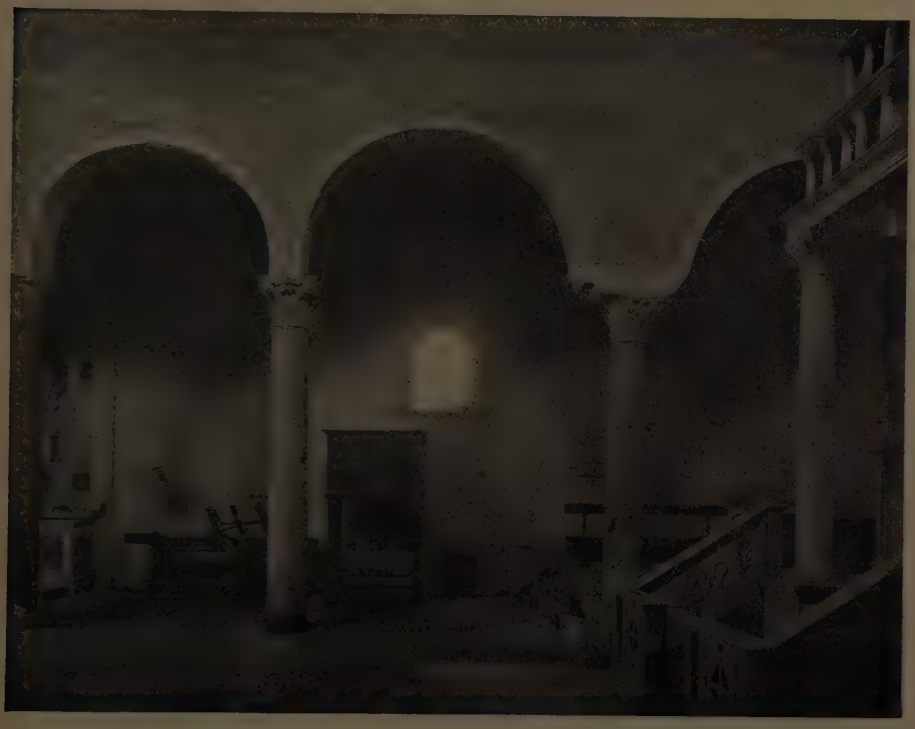
very closely upon old lines. A view of the front given in Fig. 87 shows a curious mixture of styles, for the front of the basilica itself, with its open narthex, is of the primitive structure, while the campanile is of the twelfth century, and a very fine example of the brick-built tower of the time; and at its foot, at the very left of the picture, is seen that strange Gateway of the Goldsmiths, for which see Vol. I, Fig. 251. The inte-

88—Interior of S. Giorgio in Velabro (see Fig. 87). (From photo.)

rior is given in Fig. 88, the photograph having been taken by direction of Prof. William H. Goodyear with the purpose of showing a convergence of the nave and of both aisles in the direction of the choir. The great irregularity in the size of the nave arches is not insisted on by Professor Goodyear, and this on the ground that the building is too evidently the result of rough and careless work to allow of that particular refinement of design to exist in it. Fig. 88, however, shows an interesting evidence of that haste of construction, or of some change of plan, in the new shafts rudely cut, associated with Corinthian capitals of great beauty on the left, and with Ionic capitals too small for them on the right: together with two fine fluted columns taken from some ancient

building. Fig. 89 shows how some of those capitals are made to carry two arches each, having their archivolts of different widths and therefore their abutments of different dimensions, while one of the columns carries a much wider piece of wall as its abutment, and to support this has received a super-capital, very rudely shaped and apparently waiting for further completion. The arches also are of different sizes and shapes. It is amid such conditions as are indicated by these irregularities, and in spite of poverty of resources and of artistic knowledge, that the Romanesque architecture of Italy and of the north alike took its primitive shape.

S. Maria in Cosmedin in Rome, a basilica dating from the eighth century, is of special interest because of that breaking up of the nave



89—Detail of S. Giorgio in Velabro (see Fig. 87). (From photo.)

wall into short arcades with classical columns, alternating with heavy piers. The only marked peculiarity is this division of the nave into what may be called major and minor bays; a system which at a later date was to produce such surprising results as are seen in S. Ambrogio at Milan, S. Michele at Pavia, S. Zeno at Verona, and

90—Interior of S. Maria in Cosmedin. (From Gail., Monuments.)

San Miniato (see Chapter I of Book IX). Fig. 90 shows this interior as it was before the covering of the walls with stucco ornaments, about 1850.[9]

The church of Santa Maria at Toscanella, a little town near Viterbo, north-east of Rome, has been found most interesting by all students of mediæval architecture. Another building in the same little town, the church of S. Pietro, dating from the ninth century, is of equal

91—Interior of S. Maria Maggiore at Toscanella, near Viterbo. (From photo.)

interest, and the ruined Abbey of San Giusto will repay careful exploration, which has not yet been given to it. The interiors of S. Maria and

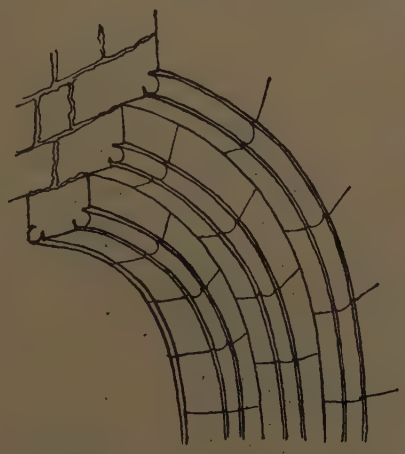
[9] The drawings made under the direction of Jules Gailhabaud for Monuments Anciens et Modernes, published in 1853, were the work, in nearly every case, of very competent men. Albert Lenoir, E. Viollet-le-Duc, contributed careful drawings to these volumes, and with them occurs often the name of Jourdan—a name not easy to identify, but which carries with it an assurance of accurate-seeming work. In the case of S. M. in Cosmedin no photograph that can be purchased is of early enough date to have escaped the theatrical treatment with festoons and candelabra in stucco which was added about the middle of the nineteenth century. The excellent photograph taken by the Brooklyn Institute of Arts and Sciences, about 1900, shows the interior in the course of a most thoroughgoing restoration, which by this time (1907) must be complete.

S. Pietro are given in Figs. 91 and 92. The plan of S. Maria is of the simplest basilica type, but very short, with only five columns of such unusual proportion that the capital seems to be in the middle of the height of the arcade instead of at two-thirds or three-quarters of the height from the floor. This peculiarity is repeated in S. Pietro with this difference, that a choir projecting into the nave is enclosed by a dwarf wall with stone seat on the choir side, and with a slight change of level so that the floor of the choir is a little higher than the floor of the aisles which adjoin it. The short columns are made to look still shorter by the building up of that wall against their bases and the shafts them-

92—Interior of S. Pietro, Toscanella. (From photo.)

selves. In each case the sanctuary with the high altar and the small unimportant baldachino is raised five or six steps above the nave. In this and in the general aspect of the interior the churches are simple basilicas of the early type, but the change involved in that enlargement of the arches spoken of above is radical, and seems to be the beginning of the fully developed Romanesque church. The scheme seems to have been deliberately planned in the case of each church, and the excess of it is so great that the student is not willing to find its only cause in the difficulty of finding columns enough, and sculptured capitals for them. It has all the appearance of being a deliberate modification of the

familiar early scheme, in which the tall classical columns supported lintels when the stone at hand was sound and hard, and small arches only when the material was inferior. In both these ninth-century churches is seen the true mediæval feeling for the large and free arch springing from capital to capital. In the archivolts of S. Pietro there is another feature, destined to be of immense importance in the developed Romanesque, the arrangement of the whole arch in rings so ordered that a broad ring of voussoirs above is supported by a narrower and this again by a narrower ring below, as shown in the sketch, so that the section shows steps like those in Fig. 93. In the case of the Toscanella church the outer and thicker arch seems to be carried on each side by a ring of corbels, exactly as in the case of the Romanesque exterior cornices. This use of corbels in the arch was not destined to survive. The corbels are cut into varied forms: no one in the original church was a spirited head or a well-represented animal; they tend rather to ornament of no representative significance, mere zigzags and rosettes, and those of no great beauty, as partly seen in Fig. 94.



93—Diagram of Romanesque arch of three orders. (Drawn by E. P. C.)

The west fronts of these two churches are undoubtedly of later date. They are noticed in Book IX.

The basilica plan, with all its parts as above described, became the most general plan for church buildings, as soon as the Christian faith was allowed to appear publicly. Much dispute exists of late years between those who conceive that the plan of early churches originated in the imitation of the classical basilica, and those who hold that the early Christians took for their type the atrium or the peristyle of a large Roman house. Those who hold the second theory go on the assumption that the Christians would naturally repeat, in a specially prepared building, the forms which had become familiar to them in three hundred years of worship, conducted often in secret, and commonly within the enclosing walls of a private house. It is pointed out, also, that no instance is recorded of a pagan (that is, of a civic Roman) basilica being turned over to the purposes of the Christian church; and that the civic

basilicas would be just as necessary after the emperor and the court had become Christian as before. On the other hand, the rows of columns in the Christian basilica, with the wooden roofs which they support, the rounded apse at one end, the rows of columns carrying the separate walls between nave and aisles, or between the aisles on the same side, and the admission of light from windows in the wall above, are all of them features very nearly like the same details of the civic basilicas as we understand them. Not one such basilica remains intact (compare Book V, Chapter VI), for even the basilica at Pompeii is known to us only for 15 feet of the height of its walls and pillars. We do not even know whether the great basilica of Trajan (see Book V, Chapter V) was roofed in all parts or had an open centre.

94—Detail of S. Pietro (see Fig. 92). (From photo.)

Figs. 316, 317, 318, and 319 in Volume I show the peristyles of private houses, and Figs. 311 and 312 show the plan and restored view of the basilica at Pompeii, and it needs no argument to convince the student of the extreme similarity between these types of building. In either case the large open hall has its roof carried by columns in the simplest and most straightforward way, without arches, without vaulted roofs—wooden beams resting upon girders either of wood or stone, which girders rest upon a row of columns made of stone or of stuccoed brick. Even that which seems so vital a difference, the roofing of the central space in one case and the leaving of it open in another, is found on examination to be a minor consideration. The peristyle of a great Roman mansion, when used to accommodate a considerable number of worshippers, would probably have the compluvium covered by an awning, a velarium, exactly as the seats in the amphitheatre or the circus were protected from the sun's rays. It is quite within the bounds of belief that a light structure more permanent than an awning

would be used in the case of a private peristyle which had served often to accommodate a congregation. The point is that in a community where all simple building, as in dwellings and in the smaller public buildings, was columnar in every respect, the first basilica or the first score of basilicas erected especially for the Christians would be planned, as a matter of course, in a way so obviously called for by the requirements of the situation, and in a way familiar alike to the workmen and to the Christian deacons who had charge of the undertaking.

Marble episcopal throne in the Cathedral (S. Sabino) at Canosa (Apulia), Italy. ca. 1080. (From photo.)

CHAPTER III

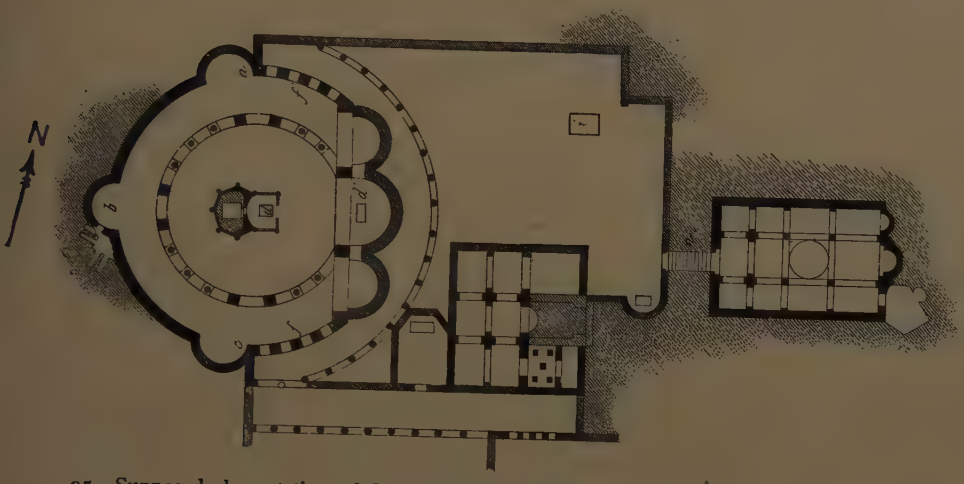
THE CHURCHES OF RADIATE PLAN

VYING with the basilica churches in popularity among the Christian worshippers and the leaders of the church are the "round churches" [11] with which Europe and the nearer East were thickly covered. The exact reasons for the frequent preference of this form are hard to fix. It would require a very minute study of the daily practices of the early church, its liturgical worship, its discipline, the behaviour and the habit of mind of the clergy and worshippers, to fix the causes for the common acceptance of these buildings during the early centuries. If the origin was in the desire to fix in the middle the place for the altar, and the sacrifice of the mass, with the congregation grouped around it, that wish soon disappeared: for, by the tenth century, the principal Round Churches were already enlarged by the addition of an eastern apse. The radiate plan was not allowed to pass through a normal development. The churches in question soon became of secondary importance, being replaced on all important sites by basilica churches, or, in a later time, by churches of a cruciform plan; and in such cases the Round Church was apt to be turned into a baptistery—and a baptistery it remains in most cases if the building still exists. These Round Churches were specially in favour in the eastern provinces of the empire, and, as is urged in the treatise on Byzantine

[11] It is necessary to find a reasonable English term for this class of buildings, and one hesitates between Round Church, considering that as a technical term; Radiate Church, in view of the fact that its plan starts from a centre instead of being founded upon a central line—an axis; and finally, Church of Concentrated Plan, in imitation of the French term *plan ramassé* which expresses nearly the same idea as "radiate church" mentioned above. This explanation given, it may be best to use the shortest and most familiar term, and this because it cannot mislead any one. Plans which are actually circular are rare, and churches having such a plan can be treated indifferently with those having polygonal, square, and oval plans, and cruciform plans with short and nearly equal arms.

Art (see Chapters IV, V), it found in the late Persian structure a ready ally leading on to the domical churches of the Byzantine provinces. Throughout the West these churches were also common, and many examples of them still remain.

One special influence was exerted over the minds of the western builders—the traditional importance of the church of the Holy Sepulchre at Jerusalem. At the time when the pilgrims from Gaul and from north Italy were most perfectly prepared to receive impressions from the buildings which they beheld, that is to say, in the sixth and seventh centuries, when for a moment there was relief from invasion



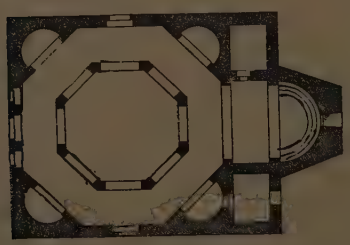
95—Supposed plan, at time of first crusade, of Church of Holy Sepulchre, Jerusalem. (From Églises T. S.)

and ruinous civil wars, there were, it would seem, three churches near together, in Jerusalem. One of these was the small basilica which replaced the ruined and almost wholly destroyed basilica built by Constantine in the fourth century. Another was a church dedicated to the Resurrection, but there is dispute concerning its site and its form. The third was the Round Church built over that which was taken to be the actual burial place of Jesus. Its plan is given in Fig. 95, according to the very carefully considered restoration published by the Count De Vogüé.[12] Of this building all the more important parts remain nearly intact. The three apses shown side by side as laid out upon a north-and-south line have disappeared. They are replaced by a square nave, beyond which, at the east end, is an apse with an ambulatory; and the

[12] Les Églises de la Terre Sainte. Paris, 1860.

whole church, made up in this way of a large western rotunda and a narrower oblong projection eastward, is surrounded by a crowd of small subordinate chapels and halls, generally in the shape of separate buildings close packed one upon the other. The only thing important to us at present is the certain existence, ever since the fourth century A.D., of the rotunda, which in the plan (Fig. 95) is indicated by the letters *a*, *b*, *c*, *f*.

This circular plan was thought to be copied by those perpetuators of holy tradition who built three of the five celebrated English Round Churches, Saint Sepulchre in Cambridge, Saint Sepulchre in Northampton, and the Temple Church, London.[13] The Templars throughout Europe were inclined to build circular churches in direct allusion to their own close association with the Holy City. The Order of the Knights Hospitallers of St. John of Jerusalem was equally associated with the Holy Sepulchre, and it is probable that Round Churches were built in Europe under the influence of that great order. Most of these Round Churches have disappeared. The famous one at Paris was preserved until the time of the French Revolution; and there still remain a circular church of this early epoch at Rieux (Aude), one at Laon (Aisne), and one at Metz in Lorraine. The large and important rotunda of Saint-Bénigne at Dijon (Côte d'Or) has been destroyed with the exception of the foundations and lowermost story, upon which, however, a new rotunda has been raised, preserving the form of the ancient building, while the foundations themselves give much information concerning the date and the system of building adopted. This basement story is now treated as a crypt, and explains very perfectly the original form of those crypts which are so interesting in connection with the great Gothic cathedrals and abbey churches of the West. They, like the baptisteries of Italy and the South, are commonly the early churches, which have been replaced, as to the primacy of each church, by a larger church building of more recent form.



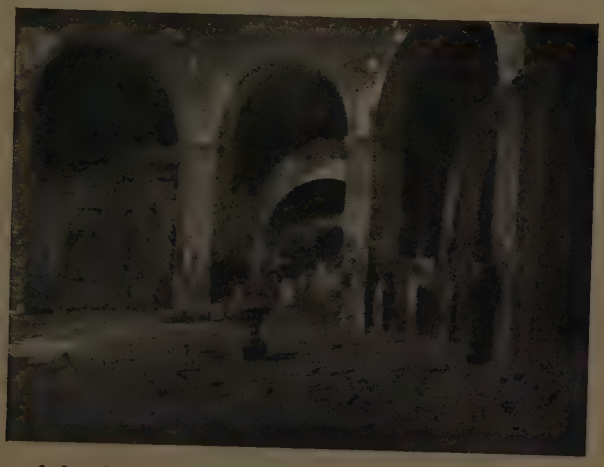
96—Plan of the church at Zorah (Ezra) in Syria. (From De Vogüé.)

In Germany there is the important Round Church of Ottmars-

[13] Another Round Church is found within the walls of Ludlow Castle, Shropshire, where it served as a chapel: and the fifth is at Little Maplestead, Essex.

heim in Alsace; in France, that of Neuvy-Saint-Sépulcre (Indre); and many others exist whose date is uncertain. The building of the church at Aachen (Aix-la-Chapelle), named below, must have exercised a widely felt influence upon builders of the ninth century. But of the primitive epoch we know very little: our only documents being the structures themselves.

In the south and east the influence of the church at Jerusalem was felt more immediately, and many buildings are evidently copies of it, while on the other hand the same tendency which led to its con-



97—Interior of church at Zorah (Ezra), Syria. (From photo., Syrian Expedition.)

struction in a round form prevailed with the builders of other churches in Syria and in the lands of the Mediterranean.

The church of S. George at Zorah, studied by E. Duthoit for the Count De Vogüé, [14] is given in Figs. 96 and 97. The plan (Fig. 96) is of extreme simplicity, the nave and the continuous aisle surrounding it being formed by two concentric octagons. The inner octagon is enclosed by the nave arcade, the piers of which are simple pillars shaped in all respects like short pieces of wall—that is, without any columnar treatment whatever, as the splayed impost is the only suggestion that the arches are other than openings cut in a stout wall built of stone blocks, as seen in Fig. 97. Upon the arches rests a drum, keeping its octagonal form, as shown by De Vogüé, Pl. 21, and pierced with eight small windows. The cupola which this drum carries is circular in plan, the round form being reached by just such easing of the octagon into a

[14] The place is called Ezra in De Vogüé's work.

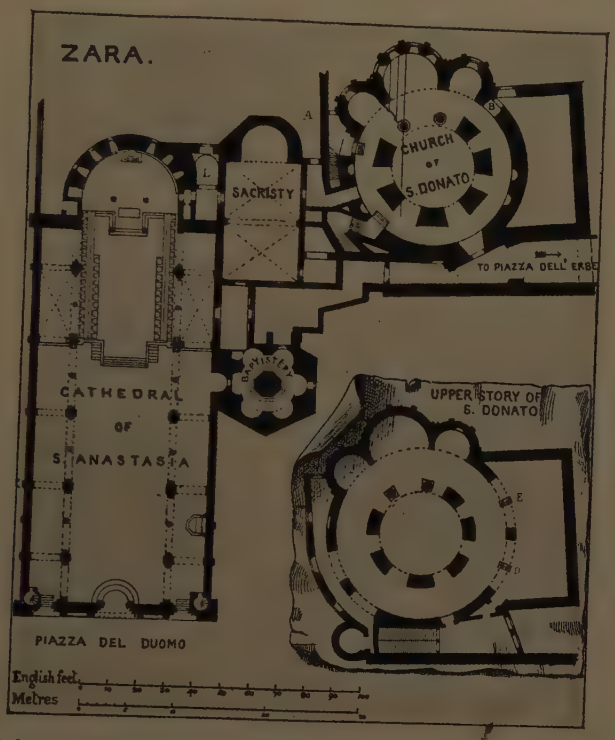
polygon with smaller sides, and that again into a circle, as we considered in Volume I, pages 91 ff. At the top of the photograph (Fig. 97) is the beginning of this drum. De Vogüé's book gives a conjectural restoration of the church; but it has been used as a fort, and heavy stone walls built up so high around the church that only the top of the cupola is visible from the outside. This cupola itself is of that curious form which we find in the later Persian work: at least as high as its horizontal diameter, and very slightly curved outward at its base, without lantern or other separate member to form an apex, and without openings. This form appears as an almost inevitable result of experiments upon the permanence of these bulging walls—for a cupola built in this way is rather a cone whose sides are rounded convexly outward, than a half sphere. The western doorway bears a long Greek inscription which is given by Mr. M. W. Waddington,[15] and which fixes the date as 512 A.D. The tympanum above the sculptured lintel has been filled in with stone blocks, as a part of the fortification mentioned.

Another domed church is not far away, the cathedral at Bosra in the Hauran, but this unfortunately is so much ruined that even when the Count De Vogüé made his journey there in 1853–54 only the walls remained traceable, and these had lost their architectural character to a great extent. There was, however, it is evident, a vast dome, the horizontal dimensions being really surprising, for the diameter as figured by Duthoit is 36.20 metres, which we render as 119 feet, and which is considerably greater than the span of the great dome of Sancta Sophia. At the four corners of an enclosing square, a large, apse-like tribune projects, and smaller niched chapels adjoin these; so that a square outer structure encloses the huge rotunda without waste space. On the east side an apse projects about 35 feet from the rotunda and this is flanked by chapels and vestries, giving to the plan a slightly oblong outline. The whole building is of stone, and the exterior facing-stones have been cut in a way to avoid the necessity of metal cramps.

The church of S. Donato at Zara in Dalmatia is so built in by the buildings of the town that it is hard to see from the streets, but it is impressive as seen from outside the city wall, because the cupola rises high above all neighbouring buildings. Fig. 98 gives the carefully worked

[15] Inscriptions Grècques et Latines de la Syrie, Paris, F. Didot, 1870. Mr. Waddington accompanied the Count de Vogüé in the Syrian journey; but the historical, numismatic, and epigraphic work of the former was chiefly used in making an addition to the Voyage Epigraphique of Phillippe Le Bas.

plan made up by Mr. Jackson by the help of other plans, as stated in his book.[16] This church is extremely rude in its construction and decoration. Excavation around its foundations has shown that the mason work of these foundations is largely composed of splendid sculptured marbles of Roman imperial times. Only a few shafts of columns and a still smaller number of capitals of classical work have been used above



98—Plan of church group at Zara, in Dalmatia, to illustrate round church of S. Donato. (From Jackson, who gives credit to Hauser and to Eitelberger.)

A. Ancient door of access to the upper church. *B*. Door of access to square building as high as the two stories of the aisle. *D*, *E*, Columns and arches of the second story aisle, once giving access to the adjoining building, now walled up. *L*, Ancient chapel serving as passage between sacristy and cathedral.

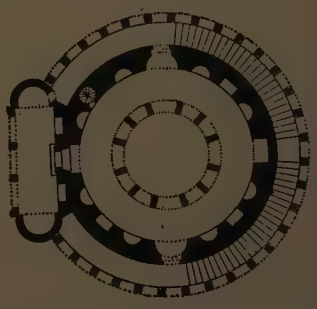
ground. The evident indifference to the stately and highly finished work of the imperial epoch is taken by some writers to denote a very early period for the church; but the more accepted opinion is that the building belongs to a degenerate period, namely, to that decadence

[16] Dalmatia, the Quarnero, and Istria, with Cettigne in Montenegro. 3 vols. By T. G. Jackson, Oxford and New York, 1887.

which seems to have come over Italian architecture in the ninth century. As the details of this church are so very coarse and undeveloped in their character it is necessary to give only one specimen of the naïve treatment which the door-heads and similar supporting arches have received. Fig. 99 shows one of the smaller doorways, which Mr. Jackson declares to be the only original piece of sculptured detail about the building. We are reminded by these scrolls of the Ionic volutes, and the difficulty there always is in accounting for them (see what is said in Volume I, pp. 202 ff., and the illustrations, Figs. 147 to 153). In fact the use of a scroll or whorl is an obvious device of the beginner in sculptured decoration—of the man who feels that he cannot carve leafage or animal forms, however rudely. The mystery, then, is not in its appearance in this door-head, but in its enthusiastic adoption by the Greeks of a great time.

99—Sculptured archivolt of S. Donato, Zara. (See *A*, Fig. 98.) (From Jackson.)

Fig. 100 is the church of S. Costanza at Rome, which building was probably a tombal chapel of the fourth century, but put to use as a baptistery at an early period. The interior view is given in Fig. 101. There is something extremely attractive in the simplicity with which the heavier wall of the round central nave, rising high above the aisles, is carried upon columns arranged in couples in the thickness of the wall. The same disposition is found in the church at Nocera, Fig. 111. The fact is admitted that the wall requires much support for its whole thickness, while on the other hand it is desirable not to occupy too much of the space in the direction of the wall. Such freedom as this is what we consider mediæval in its character; it is at least non-classic, for we cannot imagine a Greek of the central time allowing his columns to look so slender when one of a pair hides the other: his wish would be to give the required solidity in one cylindri-



100—Rome, plan of S. Costanza. (From Eu. A.)

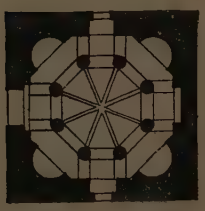
cal mass. The breach of this rule in such buildings as the tomb at Melassa (Figs. 182 and 183 of Volume I) was mentioned in connection with the building itself as a marked exception, and one which shakes our modern confidence in the uniformity of Greek building.

101—Interior of S. Costanza (see Fig. 100). (Isabelle's rendering, from Eu. A.)

The round form of plan was familiar to all those races who occupied what had been provinces of the empire. Not merely separate buildings, but special compartments of very large palaces, thermæ, and other public buildings are of this form. The caldarium of any

great bathing establishment was apt to be a rotunda, and some of these round buildings retained their vaulted roofs almost to our own time. In the palace of Diocletian in the ancient Salona, where now is the town of Spalato, there were two rotundas. In Rome the famous rotunda called the temple of Minerva Medica is known to have been a caldarium. A similar caldarium still exists in the baths of Caracalla, and one in the baths of Diocletian. Of rotundas which are in existence and well preserved, a striking example is the tomb of Theodoric at Ravenna, given above (see Fig. 54). This was a common form for important tombs; as exemplified by the great imperial family memorials like that of Augustus, and that of Hadrian, now the *Castel Sant' Angelo* at Rome. It was customary in such cases to build a grave-chamber below, in which perhaps there was room for many sarcophagi, and above a stately apartment which might serve the purpose of a memorial chamber.

The baptistery at Riez (Basses-Alpes) in south-western France is an octagon enclosed by a square (see Fig. 102). The heavy walls which allow of such a plan, and which support the thrust of a domical roof of masonry, allow of four niches in the four corners, which relieve the regularity of the polygon. Such niches might reach the floor and actually enlarge the space within, or they might appear as specially prepared chambers for memorials of any sort, much as the columbaria of the pagans allowed the placing, in plain sight, of the urns containing the ashes of the dead. A similar round chapel exists in connection with the church of Saint Maurice, now the cathedral of Aix-en-Provence (Bouches-du-Rhône); but of this only the plan and the foundation walls retain their original character.



102 — Plan of the baptistery at Riez (Basses-Alpes), France. (From Enlart.)

The baptistery at Poitiers, dedicated as usual to S. John the Baptist, is certainly the earliest church building still existing within the bounds of modern France. Fig. 103 gives the interior of this little building as it was before recent restorations. The columns and the imposts which they carry are not absolutely certain to be of the primitive design, and the painting is, of course, of the later Middle Ages. On the other hand, the dwarf columns which adorn the upper story and frame in the round windows, are undoubtedly original and are repeated on the exterior by curious dwarf pilasters apparently supporting the

narrow string-course, above which rise alternately round and triangular heads as of window openings, as seen in Fig. 104. The original building, which must have had some architectural pretensions, is undoubtedly of the seventh century, except for two apsidioles (the roof of one of which is visible on the left) and except for the buttresses which were added as a precaution in the nineteenth century.

A number of round churches of the early period are described in Chapter V, which treats of Byzantine monuments. The distinction

103—Interior of ancient baptistery at Poitiers (Vienne), France. (From Enlart.)

between Byzantine work and the western building is not always clear, for in the origin of the styles there are many points of close resemblance. On the other hand, in the churches of northern Italy built under the influence of the Lombard kingdom (about 570–770) or later in connection with the revival under Charlemagne, influencing all parts of his great empire, there is little Eastern character; and the buildings are as decidedly Roman in the Occidental sense as are the buildings of central Italy or of Gaul.

The church of S. Lorenzo at Milan is in the curious position of

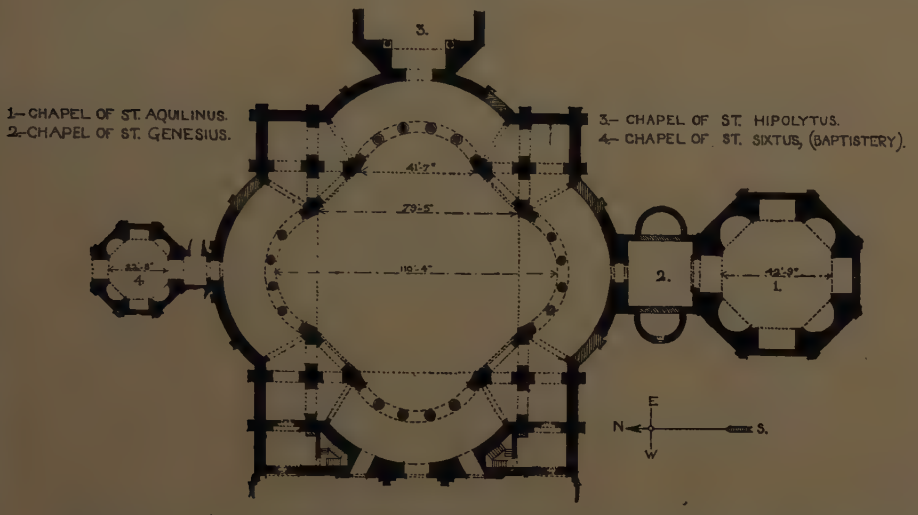
holding its original ground plan of Byzantine appearance nearly intact and certainly easy to understand (see Fig. 105), while the building itself has been several times renewed and is now a not very refined piece of Post-Renaissance architecture. Four tribunes marked by four groups of four columns each are roofed by semidomes, thus leading up to an octagon, from which springs the central cupola. The

104—Baptistery of the seventh century called Temple St. Jean, at Poitiers. The ground has been raised around it, and the buttresses are wholly modern. (From photo.)

circular chapel of S. Aquilinus on the south, and that of S. Sixtus on the north, serving as a baptistery, are both early Roman structures as far as their main mass is concerned. In S. Aquilinus the heavy walls, which are really of the full thickness marked by the depth of the niches, alternately square and circular, are sufficient to carry the cupola and to resist its thrust. The large church itself is undoubtedly the suc-

cessor of the radiate church which, in the fourth century, was formed out of the caldarium of the Roman thermæ; and the foundations are still Roman to a visible height above the ground line.

The ancient radiate church at Brescia, called commonly the Rotunda, retains its original character in a wonderful fashion. It is known to have existed before the year 838 and there is no evidence of its having been rebuilt. The internal evidence points to an unaltered existence in its present form. It is closely connected with the large seventeenth-century cathedral and serves as a baptistery. The outer walls have perhaps been rebuilt, but certainly on the old foundations.



105—Plan of S. Lorenzo Maggiore at Milan with the ancient chapels. (Drawn by E. P. C., from De Dartein.)

The piers of the nave are unquestionably ancient. They are eight in number and carry the visible drum which is seen in the photograph (Fig. 106). The outer face of this drum—of this circular wall—must have been somewhat rehandled, but the ancient wall is practically intact. The nave is seen to rise like a nearly smooth circular tower above the pent-house roof of the annular aisle and of the square western porch, which has been entirely modernized. That wall of the nave is thicker below and is seen to have been built thinner above the large openings, so that this thinner wall may be adorned with pilaster-strips of slight section leading to a not very strongly marked arcaded cornice-band. Above the unimportant round arched windows is a double ring of dentilled brickwork in very slight projection. The windows of the upper-

106—The ancient Cathedral of Brescia, in Lombardy, with seventeenth-century cathedral, and tower of Broletto. (From photo.)

most row have no architectural character beyond that given by simple round arches and a double breaking of the jamb into square, step-like mouldings. There could be no better instance of the simple appliances of the earliest Romanesque church building. The round nave rises above the roofs of the aisle, but without any attempt to give it loftiness or to crown it with a steep roof. The simple requirements of

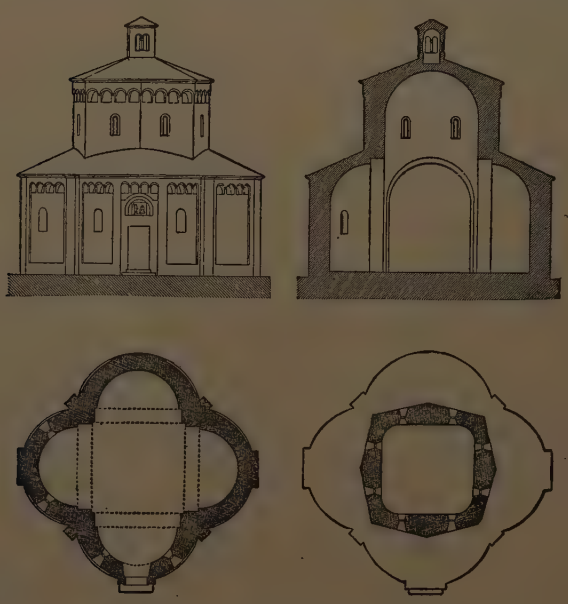
107—Exterior of ancient baptistery at Biella in Lombardy. (From photo.)

the structure are all that the exterior announces, and such architectural effect as was sought for was in the interior alone.

Of date uncertain and yet not later than the ninth century is the baptistery of Biella, north-east of Turin, in Piedmont. The exterior is shown in Fig. 107, and plans, elevation, and section in Fig. 108.

The cathedral at Aachen (Aix-la-Chapelle) was built during the reign of Charles the Great (Charlemagne). There is little doubt that the general scheme of it, as of a round church with double aisles, was brought from the Byzantine buildings of the East. It is an interesting study, in different materials and with less skill, of a more refined system

of design. The plan is an octagon, the angles of which are occupied by the piers which carry the nave wall, having outside of this octagon a polygonal aisle made up of eight square and eight triangular vaulting-spaces. In the photograph (Fig. 109) we look eastward toward the Gothic choir which was built many years later. The arrangement of the interior is unaltered except for that addition. The gallery divides the nave aisle at less than half the height of the building below the springing of the dome, and the aisle roof surrounds the drum of the dome in such a way as to leave the windows of a clearstory entirely detached, as seen in the photograph (Fig. 110). The very curious external roof with deeply indented lobes like those of a strange fruit is of unknown origin, but it has been in place since the thirteenth century at least. The finishing of each face of the octagonal nave by a gable is of a restoration generally dated in the eleventh century, and it may be thought that the peculiar plan of the external cupola itself is of the same date. The interior is, however, all that can interest the student of early architecture, including in the word "interior" the very beautiful bronze gratings which serve as parapets for the galleries and chancel screen, and the like, in the body of the church. That bronze, of certainly the original epoch, records for us the familiar use, in the buildings of the great empire, of bronze parapets and partitions of similar character.



108—Plans and sections of baptistery at Biella (see Fig. 107). (Rendering of De Dartein, from Eu. A.)

The church of S. Maria della Rotonda at Nocera is given in Fig. 111. The church is below the modern level of the site, and steps lead down into it. Arches spring across the aisle, not in a continuous ring like that of S. Costanza, but in separate rings, between which arches the vault is probably not of the same epoch. On the other hand, the

cupola of the nave or central circle is undoubtedly original, at least for the lower part of the curve, and the singular break in the curve argues the building of the cupola at two different epochs.

S. Stefano Rotondo in Rome is one of the many puzzles among these early churches. Fig. 112 gives the plan, which is undoubtedly of the fifth century, but, owing to frequent rebuilding, there is constant discussion among archæologists as to the original design of the church. It is now roofed throughout, and the rings of columns, together with the radiating colonnades in the outer circle, still exist

109—Interior of Cathedral of Aachen (Aix-la-Chapelle). The octagon, with the Gothic choir beyond. (From photo.)

in most cases, but their original purpose is not understood. One restoration supposes that the extensive outer ring of columns carried the central nave, which in this case would rise like a tower above a much larger space around it. Another assumes that the space within the smaller circle of columns was open to the sky like the compluvium in an ancient Roman atrium, and that the roof of the building

around this circular court was generally double-pitched, sloping inward toward the compluvium and outward toward the walls, with a ridge directly above the larger ring of columns. Still another restoration very intelligently worked out by Dr. August Essenwein in the Hand-

110—Exterior of Aachen Cathedral; the Romanesque octagon, at the left. (From photo.)

buch der Architektur[17] (see Fig. 113), assumes the open area in the middle and four open courts in the outer ring. According to this scheme, the central space, *A* (Fig. 112), being open to the sky, the circular aisle, *B*, is roofed by a double-pitched roof in a simple way,

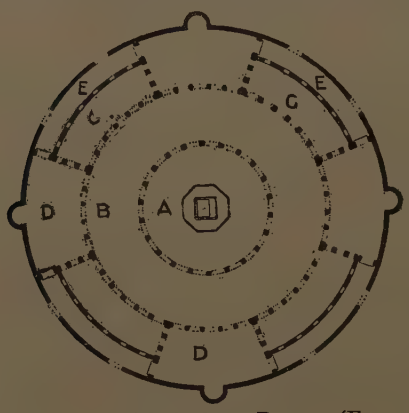
[17] Handbuch der Architektur: Altchristliche und Byzantinische Baukunst, Darmstadt, 1886.

exactly as the nave of a basilica would be roofed. Outside of this the space is occupied by four open courts, *E*, and four separate churches,

111—Plan and section of S. Maria at Nocera, in Campania. (From Isabelle.)

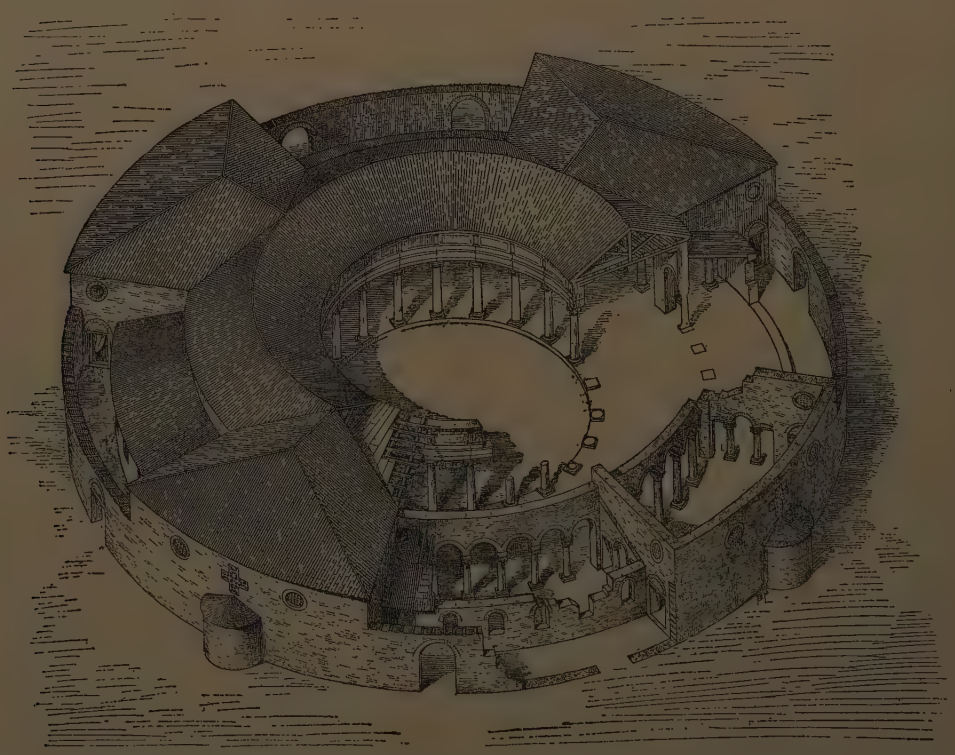
D, having each its own small apse; a system which will remind us of the great cross church of S. Simeon Stylites (Fig. 63). The remaining

spaces, *C*, are secondary or subsidiary aisles. The great size of this church, measured horizontally, allows of this very complicated system. According to this theory, there is no principal entrance, but there are doorways to all the courtyards in the outer circle.



112—Plan of S. Stefano, Rome. (From Hdbch. Altc.)

The immediate development of these round churches of the earliest time was into the very important baptisteries of the perfected Romanesque as described below (Book IX). Many of them, such as the baptistery of Pisa and that at Florence, each standing opposite the west front of the later cathedral, are eleventh-century or twelfth-century buildings erected upon much earlier plans, and partially upon the earlier foundations.



113—Proposed restoration of S. Stefano, Rome (see Fig. 112). (From Hdbch. Altc.)

CHAPTER IV

THE BYZANTINE INFLUENCE

BYZANTINE architecture is, in strictness, that of the Eastern Empire, centred in Constantinople, beginning with the reign of Constantine the Great. As, however, no existing buildings can be identified as built by Constantine, with the probable exception of S. Mary at Bethlehem (see Fig. 70), so it is only possible to fix upon certain widely separated influences as acting together upon the builders of the Eastern Empire, previous to the beginning of the great church of Hagia Sofia or Sancta Sophia[18] at Constantinople. One of these influences is found in the Syrian vaulted buildings, described in Book V (Vol. I, pp. 292–296) and in Chapter III of the present Book. Tunnel-vaults and cupolas are seen there, used freely together: and if they are of cut stone throughout, that is merely because of the comparative accessibility and convenience of that material. Such a use of cut stone is unknown in Byzantine work, but the forms remain. Another, and a very powerful, influence is that of the Parthian and late Persian (Sassanian) buildings described in Book VI, Chapter IV. In these buildings the free use of thin, hard-burnt bricks and strong mortar is found in connection with the cupola and the tunnel-vault. This method of building and these forms pass into Byzantine architecture without serious change. Again, the surface-decoration by means of thin veneers of coloured material, especially when in rather large pieces as slabs of marble or tiles of earthenware, is the direct result of Persian and Indian work of previous ages. It has been noted (Book VI, Chap-

[18] Sancta Sophia: This great church, called by the Turks Aya Sophia, from some reminiscence of the Greek term Hagia (that is, Holy or Saint) Sophia, and in English, properly, the Holy Wisdom, is known to have been begun by Justinian in 532 A.D., to have been dedicated in 537, and, after an earthquake and partial rebuilding, dedicated anew in December, 561.

ter IV) that the Persian methods of vaulting would lead inevitably to plain and even rough inner surfaces of brick and mortar, and that no constructional ornament was possible under such conditions. Moreover, decoration by means of rich covering patterns is commonly the chief resort of Asiatic builders, and it has been the chief success of the artists of Asia. It has been always the custom in Asia to put much of the artistic force of the people into textile fabrics, into embroidery, and into painting on enamelled pottery and on varnished and otherwise smoothly coated wood. The Indians indeed used stone-carving of the richest sort in surface-adornment, but that custom did not prevail in Persia, and there was little chance for direct influence of India over the Occident.

As the system of building used by the Persians of the second and following centuries compelled the masons to leave their walls and vaults rough and rather unsightly in unmodified brickwork, so the Asiatic would accept this at once, and without objection—prepared as he was to cover it with carpets, or, more permanently, with painted tiles, or with thin veneer of the delicately spotted and veined stones most capable of taking a polish. And here the whole system of decoration was taken over by the Byzantines; for it was not wholly remote from the methods used under the earlier Roman Empire (see Vol. I, pp. 409 ff.). The imperial engineers of the second century had known how to build first, and then to cover the building with surface-adornment—with mosaic, stucco, marble in slabs and in inlaid patterns; and the moment this ancient and accepted Eastern way of building and of ornamenting a structure suggested itself to the Eastern heirs of the Greco-Roman art, or was brought to their notice, it was adopted.

Mosaic was one of the most obvious ways for adorning the interior surfaces; and the Grecian traditions of representation of humanity in art caused, then, the use of pictures in mosaic to appear the most natural and obvious way of decorating large wall-surfaces and the rounded concavities of vaults. As the sacred history and the legends of Christianity were in every one's mind as the one theme of constant interest to men, so the mosaics, like the panel pictures and the miniatures, would be most commonly of religious subject. Exceptions there would be, as when in San Vitale of Ravenna the half-sacred persons of the emperor and the empress took the place generally seen filled by persons of the New Testament: but even this had probably its origin in the growth of the iconoclastic "heresy" in Constantinople.

CHAPTER V

BYZANTINE MONUMENTS

THE round buildings remaining from the early empire were fully radiate in plan, and from the foundation upward. No risks are taken in trying to carry round domes above square halls. And so in the fifth century the roof of S. George at Salonica consists of a cupola carried upon a wall so very heavy that no question as to its stability can arise (see Fig. 114). If in such a building the wall is pierced by deeply recessed chambers serving as chapels,

114—Plan of church of S. George, Salonica. (Drawn by E. P. C. from T. & P.)

those are roofed by vaults of their own, and the wall retains its great thickness and becomes solid, or nearly so, at the top of the drum. The apse, *A*, is a mere addition, relatively slight in structure, and replacing one of the chapels. Fig. 115 shows the exterior of this church. The cupola begins to assume its hemispherical form at a horizontal line just opposite the aisle roof, and it leaves the wall of the drum, becoming a mere shell, at a level a little above the string-course which projects

115—Exterior of S. George at Salonica (see Fig. 114). (From T. & P.)

116—Tomb of Galla Placidia, now a church, Ravenna. (From photo.)

from the wall. The external roof of wood covered with tiles is raised about 12 feet above the outside of the masonry cupola, and the little windows seen near the top of the wall serve merely to light and ventilate the waste space within. In this church, therefore, the special glory of the Byzantine and late Roman vaults, that of forming homogeneous roofs serving at once for interior and exterior needs, is abandoned, and the building loses much interest in consequence. On the other hand, the church is richer in interior decoration, the cupola especially having

117—Interior of tomb of Placidia (see Fig. 116). (From photo.)

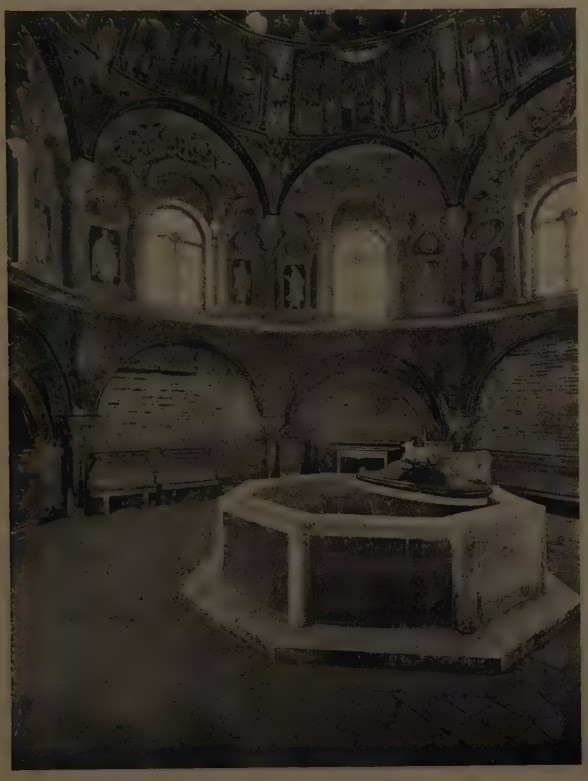
a magnificent series of mosaic pictures; the niches forming chapels being adorned with simpler designs wrought also in mosaic with a gold ground.

About 425 A.D. was built, at Ravenna, the Mausoleum of Galla Placidia, now called the Church of SS. Nazareo e Celso. This little building is shown in Fig. 116. The ground has risen around it. The small cruciform building has the central part, the nave, raised into a square tower of considerable relative height. Fig. 117 shows the interior to be made up of four arms vaulted with tunnel vaults and the central square roofed with a groined vault. There can be no doubt that

118—Detail of the mosaic of vault, tomb of Placidia (see Fig. 116). (From photo.)

119—Exterior of S. Giovanni in Fonte. The baptistery of the cathedral called also Baptistery of the Orthodox, and Neone's Baptistery, at Ravenna; level of ground concealing a third of its height. (From photo.)

these are the original vaults and that the greater part of the mosaic is of the fifth or sixth century. There is no more successful design of a purely decorative effect anywhere to be found, and the photograph (Fig. 118) shows the mosaic in the ceiling of the eastern apse above the sarcophagus, in front of which is the altar. It is extremely curious to see, in the art of this gloomy epoch, the two tendencies at work side



120—Interior of S. Giovanni in Fonte, Ravenna (see Fig. 119). The entrance seen on the left was put into shape in 1866 so that it could be used. The mosaics are of the sixth and seventh centuries, above the arches, near the top of the picture; below that they have been pieced and altered at various epochs. (From photo.)

by side, the disappearance from sculpture of all artistic merit, and the strong growth of abstract colour decoration in flat patterns. The increase of Oriental influence in Italy, the Byzantine character which for six hundred years was to be felt in all the work of the peninsula, could not be better shown by a single instance. Partial rebuilding has not harmed the little church. The rude brick walls and the slight corbelling of the cornices, the arcading, the windows with invisible

arches of discharge, might all be fifth-century work, as they are its reproduction. And, in the interior, the details of the mosaic, and the marble dado, are not in essentials different from those of an earlier time.

There are, in the Byzantine empire, basilicas as well as churches with central sanctuary, even of this early period; but the characteristic Eastern type is that which has its important sacred objects, the high altar and the shrine of the saint, under a principal dome and generally in the middle of the building, rather than at the eastern end. The circular form is the obvious and ready way of carrying out that scheme, but it is not as characteristic of the Byzantine style as the square church with one round dome or more. The square and cruciform domed churches of the East were copied in the West at a later time, as at Périgueux in the church of S. Front, and in S. Mark's Church at Venice (see below), but the Western round churches of the fifth and sixth centuries were not Byzantine in character, as explained in Chapter III.

121—Plan of church of S. Giovanni in Fonte, Ravenna (see Fig. 119). Half plan of floor; half plan of second story, showing the apses rebuilt in 1866.

The church at Ravenna called S. Giovanni in Fonte was perhaps a part of an ancient bathing establishment—the rotunda (which was generally the caldarium or hot room) of the town thermæ. It has been so altered by the gradual raising of the level of the site, that even the too bold restoration undertaken in 1865 did not involve the lowering of the floor to its ancient level. As it stands now, the exterior is low, as seen in Fig. 119, but the building was an octagonal tower at least one and a half times as high as wide in exterior dimensions. The present doorway of entrance was pierced in the wall seven or eight feet above the ancient door. The interior view (Fig. 120) explains this in part, for it is seen how the present pavement reaches nearly to the capitals of a ring of columns, which columns were very much longer than those of the story above, having, indeed, shafts at least twelve feet in length to the necking of the capital. There were four apses pro-

jecting from four of the eight sides of the tower. Two of these are seen where they rise six or seven feet above the ground in Fig. 119. They had disappeared but were replaced in 1866–67 with a very proper feeling for judicious restoration. The plan (Fig. 121) shows this as it now exists, and there can be no doubt of the general accuracy of the preservation of the ancient form as we now have it. The entire absence of any suggestion of an aisle or of a single larger apse on the eastern side, is accounted for by its original situation, wedged in by the other buildings of the thermæ.

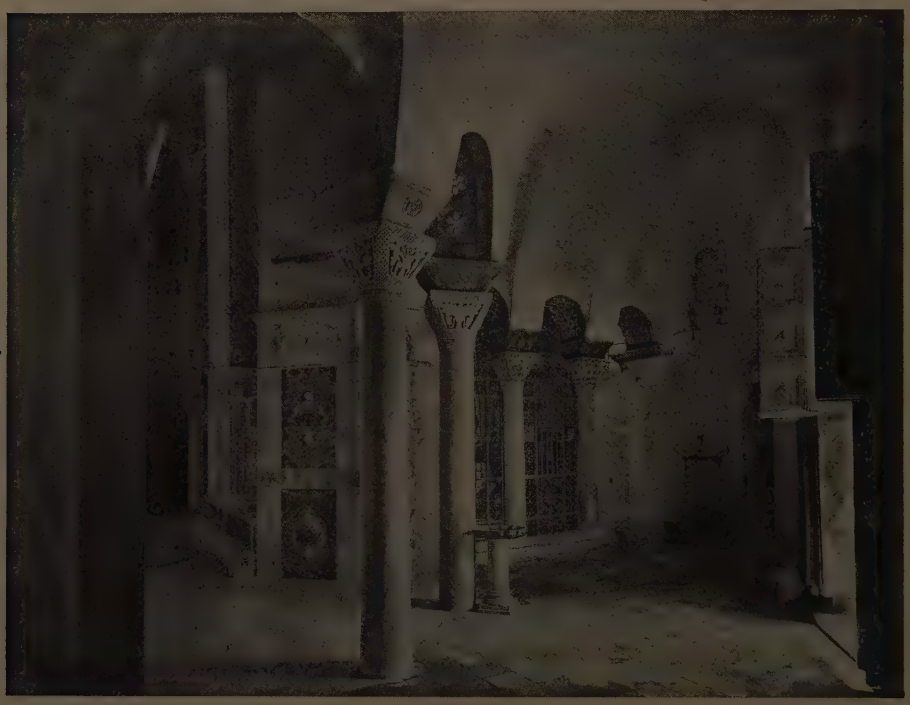
The Baptistery of the Arians, which is now connected with S. Maria in Cosmedin, in Ravenna, is a building of the same general

122—Plan of nave and aisles, with choir of S. Vitale, Ravenna. The existing narthex and the round staircase towers are of disputed antiquity. (From Isabelle.)

plan, but having three of the apses rather more projecting than those of S. Giovanni in Fonte, while the fourth apse has been enlarged and projects nearly half the diameter of the octagon.

The famous church of S. Vitale at Ravenna was built between 526 and 546 A.D. The exterior can hardly be shown in a photograph in such a way as to explain it aright. The plan of the church is shown

in Fig. 122, and it is clear that the octagonal nave rises like a low tower above the aisle, while in the interior the octagon breaks out into seven rounded tribunes, and on the eighth side into the greater projection of the choir, terminating in a round apse. Taking this plan as our guide, Fig. 123 shows the interior of the circling aisle at the point where the entrance doorway on the right and the passage thence into the octagon on the left are both visible. Overhead is seen the curious complicated vaulting brought into being by



123—Interior of S. Vitale (see Fig. 122). On the right, entrance doorway close to choir. The grille with two columns is the choir screen. (From photo.)

the springing of the arches from the exterior of the rounded tribunes, which in this way prevent the aisle from having a single ring roof, a single tunnel vault carried in a circle. As in S. Costanza at Rome (Fig. 101) the wall below the spring of the vault is seen to be everywhere sheathed with marble and alabaster of very rich veining, and the shafts of columns are of precious material, some of them being well-known pieces of alabaster, famous for their beauty and their translucency. The capitals are seen in this picture to be of varied form and of many designs in sculptured decoration. These capitals

are so interesting that the one seen immediately above the holy water basin is given on a larger scale in Fig. 124. Fig. 125 shows a capital of a different form, having that curious lobed plan which came into use in the sixth century. The treatment of the modified acanthus in this capital should be compared with the similar sculpture in the capitals of S. Sophia (see Fig. 139). There are in the church many most interesting capitals of late Corinthian style, Italian fourth-century fragments taken from buildings of the empire.

Fig. 126 shows the entrance to the choir and a small part of the sanctuary beyond, where the wall of the apse begins to curve. The

124—Capital of S. Vitale (see Fig. 122). (From photo.)

view, then, is taken looking north-eastward, and the great mosaic seen under the arch and above the three small arches of the triple arcade is that on the north side of the choir, and represents Abraham's sacrifice.

Any large photograph of the interior of this church shows so many of the disfiguring additions of the seventeenth century, especially in the way of the painting of festoons, architectural entabla-

tures and parapets, cherubs, angels carrying attributes, and the rest, all rendered in a deceptive way with imitations of relief and expressing the most remote and inappropriate designs, that it is more painful than instructive. A view of the choir and apse alone gives a satisfying artistic impression.

More important mosaics have been saved, however. Fig. 127 shows the mosaics on the north side of the chancel and just beyond

125—Capital of S. Vitale (see Fig. 122). (From photo.)

the triple archway. The subject of this is the Emperor Justinian with his attendants. The decorative character of these is perhaps surpassed by the wonderful mosaics in S. Apollinare Nuovo, described below, but considered in its place on the wall of the choir it is as effective as the adornment of a wall can be. Even the historical interest joins with the play of line and tone to produce an entirely satisfying and appropriate decoration.

At Constantinople, where the great development of Byzantine

architecture was to be, nothing of Constantine's time remains except the great cisterns for the storage of water. In one of these, the cistern of Philoxenos, now called by the Turks the Bin Bir Direck, pillars carry very small square vaults. The picture (Fig. 128) shows the present condition of the cistern, which has long been dry and is used as a workshop by different classes of workmen. The earth has accumulated on the floor to a depth variously stated as from 7 to 10 feet. The pillars still have nearly 27 feet of height above the modern floor level, and the vaulting squares are about 12 feet wide. The vaults are built of large Roman bricks set in cement. Four semi-

126—Interior of S. Vitale, choir as seen from nave (see Fig. 122). (From photo.)

circular arches enclose each square, and the space within is vaulted with a simple groined vault having only this peculiarity, that it is much "domed up"; that is to say, the crown of each quarter of the vault is not a horizontal line, but is higher in the middle of the vaulting square than the middle point of any side, as shown in Fig. 129.

This system of vaulting became almost the special characteristic of Byzantine construction. All parts of a church which were not directly roofed by a cupola and its pendentives, were closed at top with such square vaults as these of the cistern; and this whether the final roofing of the building is concerned, or merely the under side of a

127—Mosaic on wall of sanctuary, S. Vitale (see Fig. 122). (From photo.)

gallery. Thus, in the plan of S. Sophia at Constantinople (see below, Fig. 136), the squares and oblongs in which the vaulting is indicated by dotted or broken lines, which start from the corners toward the centre and stop before reaching it, are the indications of just such vaults as those of the great cistern. Such vaults are easy to build wherever the building can be reduced to a series of nearly equal squares, with uprights carrying the four corners of each square. The simple tunnel vault leads directly to the groined vault [19] and these are the natural forms to employ when you have skilled masons, and abundant resources in stone, brick, mortar, and wood. On the other hand, the domed-up vaulting-square within the four transverse arches

[19] For the theory of groined vaulting, see Vol. I, p. 301, and footnote with diagram, Book IX. Ch. I.

is the natural form for a period of less certainty and less vigour. The Greeks of the Byzantine Empire were skilful enough, and the materials for mason-work did not fall short within the boundaries of the home provinces, but there may well have been a scarcity of timber for centring, and moreover old tradition and the habit of building vaults without wooden supports would have caused the adoption of the simpler system.

A very early church of radiating plan is that known as Kutchuk Aya Sofia, "Little S. Sofia," from its general resemblance to the great church. An inscription records its foundation by the Emperor Justinian (reigned 527–565), but it does not appear certain that the inscription is of the original epoch. The church is of generally domical type, nearly as wide as long—such a building as comes of the wish to cover

128—Cistern of Philoxenos, Constantinople. (From photo.)

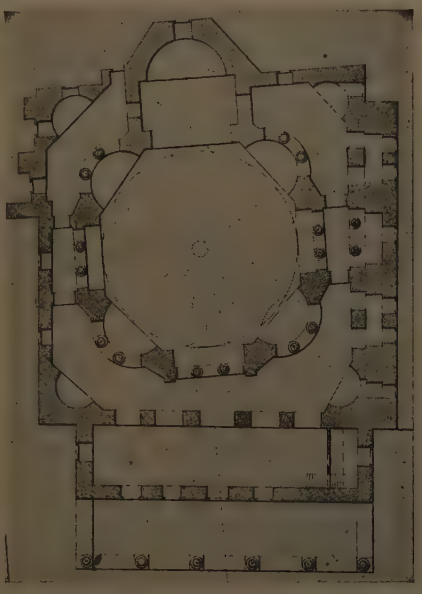
a central square with a circular roof. Near it stood a church of basilican plan—that is, comparatively long and narrow, with nave and aisles in the usual form—and these two faced upon one and the same atrium or court of entrance. It is probable that one of those churches was dedicated to S. Sergios and the other to S. Bacchos; and that in the course of years the double name SS. Sergios and Bacchos has been given to the one church which still remains. This church is given in full illustration—plans, elevations, and sections—by a great number of generally careful authors, among them those named in footnote on page 147; and yet the actual construction of the dome remains imperfectly known. The greater number of mathematical sections published, and of those

perspective sections as they may be called—that is, drawings in which the building is supposed to be cut through the middle and then shown as it would seem when so cut—the perspective view of a section, so to speak, all disagree widely among themselves. It is disputed whether the dome is carried on pendentives or started from a solid drum; for generally trustworthy authorities give both versions, in plates and in text. The latter opinion appears the safer, because it is maintained by Auguste Choisy in his Byzantine Building, and by W. R. Lethaby, who with the late Harold Swainson made for us that admirable study of S. Sophia[20] which has done so much to make Byzantine architecture a real possession of the modern world of students. These investigations agree in stating that an octagonal drum is carried on eight piers, each of generally triangular section, as befits the springing of broad vaults from pier to pier in the direction of the sides of the octagon; and that the rounded shell of the dome springs from the top of that drum as from a solid floor. The horizontal shape of the dome still remains in doubt; for while these writers agree in its resembling a melon when seen from within—consisting, as it does, of hollow lobes, the plan at any horizontal level showing a scalloped outline of eight parts—Mr. Lethaby's scheme shows every alternate scallop filled up with a straight wall. There is a sufficient reason for this peculiarity, as a result of late Turkish plastering. So far the disagreement is comprehensible and excusable, because it is hard to get sufficient opportunities to examine a mosque in a Moslem city, and because the internal ornamentation added and altered during four

129—Study of Byzantine vaulting, from cistern of Philoxenos (Fig. 128). (From Salzenberg.)

[20] The church of Sancta Sophia, A Study of Byzantine Building, by W. R. Lethaby and Harold Swainson. London and New York, 1894.

hundred and fifty years of Moslem occupation has concealed the constructional forms: but the question of pendentives or no pendentives should be easy to decide. On the other hand, the ground-plans given by the writers named below are preposterously divergent, and one reason for selecting the plan given in Fig. 130 is the very fact of its bold divergence from the regular type; for Salzenberg and those who follow him make the church as exact in its quadrilateral form and its right angles as any modern piece of engineering. According to this plan, the octagon of pillars which carry the dome is very nearly exact, and it is probable that this was built with special care around the centre fixed in advance, for the general hemispherical roof. The outer walls, however, and the deep recessed windows on the right-hand side in our cut, must have been built among half-ruined buildings of earlier time. There seems no reason to doubt the general accuracy of this plan.[21] The very general unwillingness on the part of authors and draughtsmen, especially when they are, in their own eyes, discoverers of valuable facts, to confess to uncertainty, is not badly shown in this instance: and hence the great need of a doubting and a tentative state of mind in all such investigations. At the same time the representation given by Salzenberg and others, in which pendentives are shown, leading gradually to the ring of the cupola from the octagon below, seems to



130—Plan of S. Sergios, Constantinople. (From Pulgher.) As the narthex faces the sea, the apse is turned toward the north.

[21] A valuable paper by Prof. Allan Marquand appeared in *Records of the Past* for December, 1906. The bibliography of the church is given, and the contrasting opinions of the different authors are explained in the text of the article. Salzenberg (Alt-christliche Baudenkmäle von Constantinopel, vom V bis XII Jahrhundert, published in Berlin, 1854) gives the plan and other drawings in careful outline engraving, and those drawings have been followed by many scholarly as well as many popular writers. On the other hand, D. Pulgher (Les anciennes églises byzantines de Constantinople, Vienna, 1878–80) gives the plan reproduced in Fig. 130, and this has been followed by Adamy in that volume of his trustworthy series which is entitled Architektonik der Altchristlichen Zeit (Hanover, 1884).

be an inexcusable blunder. The photographs of the interior, because of those plaster additions already named, do not, indeed, give us much that is valuable; but they do show that the octagon is carried up to the top without alteration in form.

The work of Pulgher contains a section of the cupola made in accordance with the plan, Fig. 130. Fig. 131 shows the perspective section given by Auguste Choisy.[22] These two *relevés* agree in the general proposition that the dome starts, without pendentives, from a horizontal shelf or table formed by the top of the octagonal drum; but they disagree radically in this, that Pulgher's plate shows eight pieces of wall, alternately flat and concave, and carried up vertically until they meet the curvilinear lobe of the melon-shaped hollow above; while

131—The dome of S. Sergios (see Fig. 130). (From Choisy, Byzantine.)

the scheme of Choisy shows the lobes unfilled and undisguised from the springing of the dome to the crown. This difference is in part explained by the modern plastering; and a photograph of the interior, which of course shows this plastering, would contradict both these theories of the construction, were it of any value as testimony.

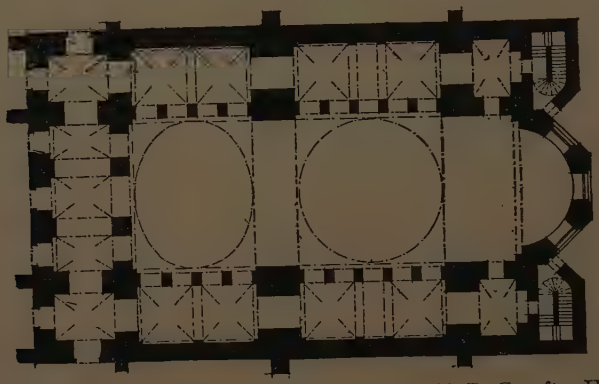
The absence of pendentives, which certainly are not to be found in the church of S. Sergios, marks the most curious distinction between the Sassanian buildings of the third century (see Book VI, Chapter IV) and some of the earliest Byzantine monuments. It is evident that the Greek habit of mind, inquiring and logical, asking an indefinitely great number of questions about what is possible and what is economical, had led its possessors into these different paths of investigation

[22] L'Art de Bâtir chez les Byzantins.

and experiment. The dispute between those who assert that Byzantine art is Roman art modified by Eastern requirements, and those who allege it to be Oriental almost exclusively, seems not to allow of final adjustment. The fact most strongly impressed upon the inquirer who will go back step by step from the mediæval round-arched building until he reaches the Roman practice of the fourth century, will be that he must go elsewhere than to the builders of the empire for the origin of this Byzantine building. The churches of Salonica, of Adrianople, of the towns of Greece and of Syria, are nearly always far more Eastern in character than they are European. No builder who was much influenced by the Roman imperial engineers ever designed these churches with plan of a cross with short arms, four of nearly the same length, and having a comparatively large central open space roofed by a generally hemispherical cupola. That is a Persian, and a late Persian, or Sassanian, idea. Whether pendentives are used or not is outside of the question. The builders of that time and of that country were not the masters of elaborate draughting; they laid out their plans on the ground, and started their piers from the point marked on the site by driven stakes. When these piers reached a certain height, a height perhaps not even fixed until that level was reached, and the certain and the possible cost had been calculated afresh, they began to build a curved roof; but they did this without centring, without an elaborate scheme of construction, with merely a decision reached between two comparatively indifferent ways of proceeding. Their light, hard bricks and their adhesive mortar enabled them to do wonders with this process, little known in modern times, of building vaults without centring. We can imagine the builders disputing among themselves, even at the eleventh hour and on the scaffolding, and the opinion of a bold innovator sometimes carrying it over the more timid scheme of him who would follow precedent.

The church of S. Irene, in Constantinople, now used as a museum of arms and implements of war and therefore not commonly spoken of by any Turkish name signifying a mosque, is undoubtedly in its main plan and proportions of an epoch earlier than the reign of Justinian. Fig. 132 is the plan of this church, showing two cupolas only, as groined vaults support the galleries, and roof the narthex. The eastern cupola is carried on four great arches, which are extended into short tunnel vaults, under which are the north and south galleries. The western cupola, of oval plan, is supported in the same way, and here

also are galleries under the tunnel-vaults of the north and south sides. Fig. 133 is the northern side of the same in its present condition, in which it will be seen that the apse, on the left hand, is low; the semi-dome not rising as high as the constructional arch across the choir. Of the two great divisions shown on the plan, one, the easternmost, indicated by a circle, denotes the rather lofty drum carrying a low, rounded roof; the other, elliptical, is covered by a cupola not rising as high in the middle as the drum of the eastern cupola and entirely invisible from without. The great arches which occupy nearly the whole of this northern wall of the church will be seen in the plan to occupy the



132—Plan of S. Irene, Constantinople. (Drawn by E. P. C., after Hübsch.)

whole space between the heavy piers. Their span is about 47 feet, and four such arches enclose each square, which square is filled by spherical pendentives (see Vol. I, Fig. 67) and a cupola of the full size of the square. This system of construction is very slightly modified in the great church of S. Sophia, and it gives the most typical plan of all those used by the Byzantine architects.

It is curious to see how little architectural significance is given to the huge wall spaces within the great arches. The Romans of the empire filled lunettes such as these with slabs of marble pierced with holes for light, or with bronze framework, using them in every case as great windows; and the later Romanesque and Gothic builders were to employ these openings to the full in the same manner; these openings and their fillings by means of tracery affording the most marked feature of the style: but the Byzantine builders of the fifth century and thereafter could think of nothing better than to carry up a solid wall pierced with windows. The original rows of windows were probably finished with round arches; indeed the drawings made by

Salzenberg and others show this feature: and there is little doubt that the square heads are a modernization; but it is still a solid wall with small, equally spaced windows, and not an architectural filling especially designed. On the other hand, the ring of windows in the larger cupola is probably the earliest instance of that lighting of a great cupola by a belt of small openings, the very reverse of the system of the Pantheon (see Fig. 295 of Vol. I). The ring of windows is found in a wonderfully effective form in the church of S. Sophia at Constantinople.

In S. Sergios, mentioned above, one most interesting feature is the narthex at the western end. This of S. Irene (see Fig. 132) is

133—Exterior of S. Irene, from the north (see Fig. 132). (From photo.)

a fine porch, but that of S. Sergios is even more complete in that it is continuous from side to side of the church, as befits a centralized plan, in which there are no parallel nave and aisles suggesting the cutting of the narthex into three pieces. This motive, a tunnel-like narthex carried from the northern to the southern side of the church, lingers long. It exists in the very ancient church at Koja Kallesi in Isauria, published by the Hellenic Society, and in the church of S. Sophia at

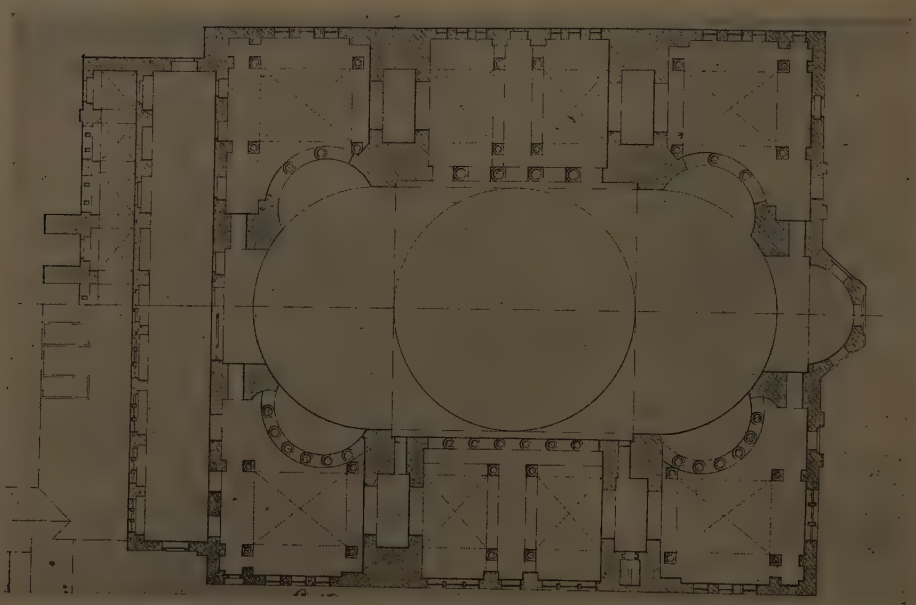
Salonica; and it became the typical disposition, being found in the great basilica of S. Peter at Rome built a thousand years later. In S. Sergios as in S. Sophia, it is two stories high, the upper story opening into the church and connecting with the gallery which forms a part of the gynæceum. The completely mediæval character of this very early Byzantine church is seen in the detail (Fig. 134). The reminiscence of the Ionic style seen in the volutes has influenced the sculptor but slightly. He was much more concerned with that immense impost-block or super-capital (the architectural name of which is not settled) which bears the rich scroll sculpture suggested by Greek anthemions and Greco-Roman acanthus leaves, but reduced to a mere surface decoration in very slight relief. That block is perfectly square at bottom as at top, and no attempt is made to carry or build up the projecting abacus.

134—Column of upper story of S. Sergios (see Figs. 130 and 131). (From Salzenberg.)

In 532, in the reign of Justinian I, the old church of S. Sophia was burned. The work of reconstruction was begun a month later, and the

135—Interior of S. Sophia, Constantinople. (From photo.)

church was dedicated in 537; but in the year 558 an earthquake so injured the church that the great piers of the dome yielded. A partial rebuilding was begun under the direction of the same masters, one of whom, Anthemios, survived to complete the church in its present form, so far as the interior goes. It was consecrated again in the 36th year of Justinian's reign, on the 24th of December, 561. The description of the earlier and the later church by contemporary writers is of remarkable minuteness, as if the authors had felt an interest, very rare in a writer of antiquity, in the actual details of the

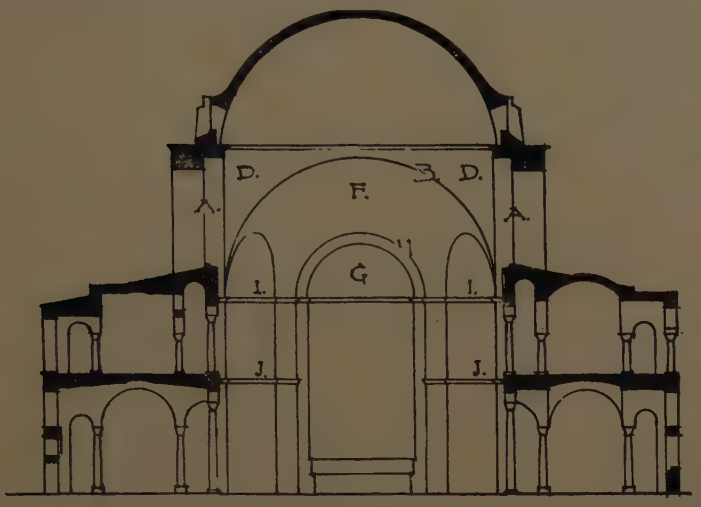


136—Plan of S. Sophia, Constantinople. Above, half plan of ground story; below, half plan of galleries. (From Pulgher.)

building—a matter generally scorned by scholars and historians until very recent times.

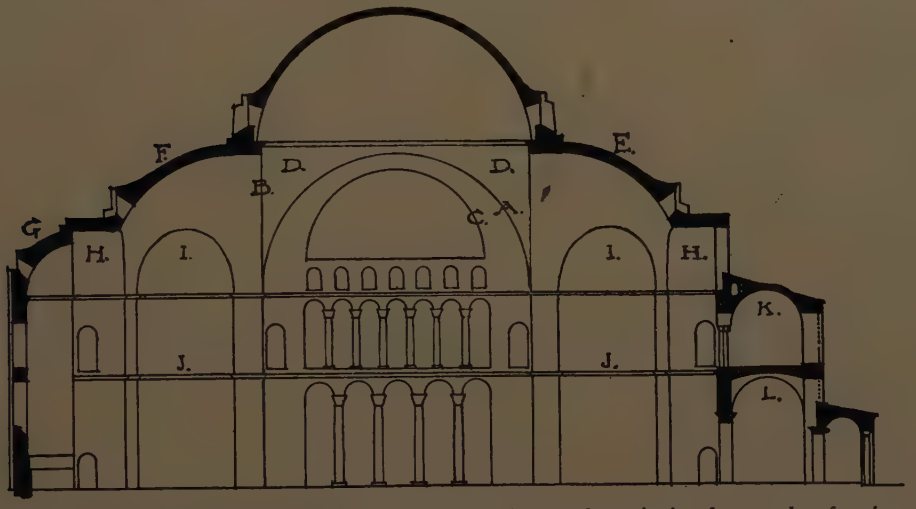
The church as completed has this peculiarity, which separates it from all other buildings: the low-pitched dome rises above a square space limited by solid walls which on two sides rest each upon a great semicircular arch, but on each of the other two sides rises above the largest half-ring of a semi-dome. The photograph (Fig. 135) shows on the left and right the two arches of the flanks, and in the middle the semi-dome of the eastern end, beneath which and breaking into its curve are the three smaller semi-domes of the eastern apse and of the two subsidiary apses or tribunes seen in the plan (Fig. 136). Here on the

east side there is no visible arch supporting the great dome, but the innermost and largest ring of the great semi-dome must be taken to



137—S. Sophia. Outline section from north to south, the cupola springing from great arches built independently. (Drawn by E. P. C., from design by the author.)

be such an arch. Fig. 137 is a diagram of the cross section, in which it is seen that *A A*, the great arches of the north and south flanks, close the square on those two sides and support half the circumference of



138—S. Sophia. Outline section from east to west, the cupola springing from arches forming part of the semi-dome. (Drawn by E. P. C., from design by the author.)

the dome. Fig. 138 is a similar diagram of the longitudinal section where it is seen that no visible arches correspond to *A A*, and that the

eastern and western sides of the square are closed in another way. Fig. 137, therefore, shows a somewhat familiar disposition, but Fig. 138 shows a scheme not employed elsewhere. *B*, in each of these two sections, indicates the invisible arch which is really a part of the great semi-dome whose exteriors are marked *E* and *F* in the longitudinal section (Fig. 138).

In this way four great arches carry the square filled by the pendentives and the cupola. These pendentives are part of a great sphere, exactly as in the diagram, Fig. 67 of Vol. I, with this difference only, that it is a square and not an oblong from which the pendentives start. They can be identified in the photograph, Fig. 135, by the mosaics of cherubim with six wings, almost the only scrap of Christian decoration which remains visible. In this way the ring at the foot of the great cupola is carried above the square.

The result of this structure is to give a singular lightness to the interior. It is, of course, an admirable scheme for a great hall, that the nearly hemispherical roof in the middle should rise above the four pendentives which add so much to its elasticity and lighten the whole structure in appearance. This effect we have in S. Peter's of Rome and in many a smaller building throughout Europe. In S. Sophia, however, the dome rises from half domes, in a marvellous way. The result is that the whole vast space within the arcades and below the rounded roofs is increased in apparent size, and that the great dome itself becomes less a separate feature than the culminating shell of a gigantic hollow structure, whose conditions of stability are, at first, hard to understand. This strange lightness is increased by the daylight coming in through the ring of windows around the base of the great cupola. The effect of this is, of course, to lighten the effect of the cupola itself, and to a certain extent to diminish its height above the floor; but the general dignity of the whole interior is increased by this streaming in of the daylight through a ring of openings which merge into one band, and which are repeated by the bands of windows below. This method of lighting is not necessarily superior to that of the wonderful Pantheon at Rome, but certainly it rivals it in effectiveness. It is probable that on the whole S. Sophia is the noblest interior in the world.

The splendour of general effect is well seconded by the refinement of detail in sculpture and mosaic. The whitewashing and plastering of the Turks has hidden all the church emblems and sacred legends

139—Columns of the lower arcade, S. Sophia; the N.E. tribune in the distance, on the right. (From photo.)

which offend Moslem belief and Moslem rules of design; but the decoration in flat patterns is good in colour and is either the original mosaic or a rather close copy of it. We may long for a complete cleaning of the interior, but it is not with that sense of despair that we feel when a noble building is spoiled by its added ornamentation, as in the case of S. Vitale in Ravenna, described above in this chapter. The

140—Vaulting shaft, S. Sophia. (From photo.)

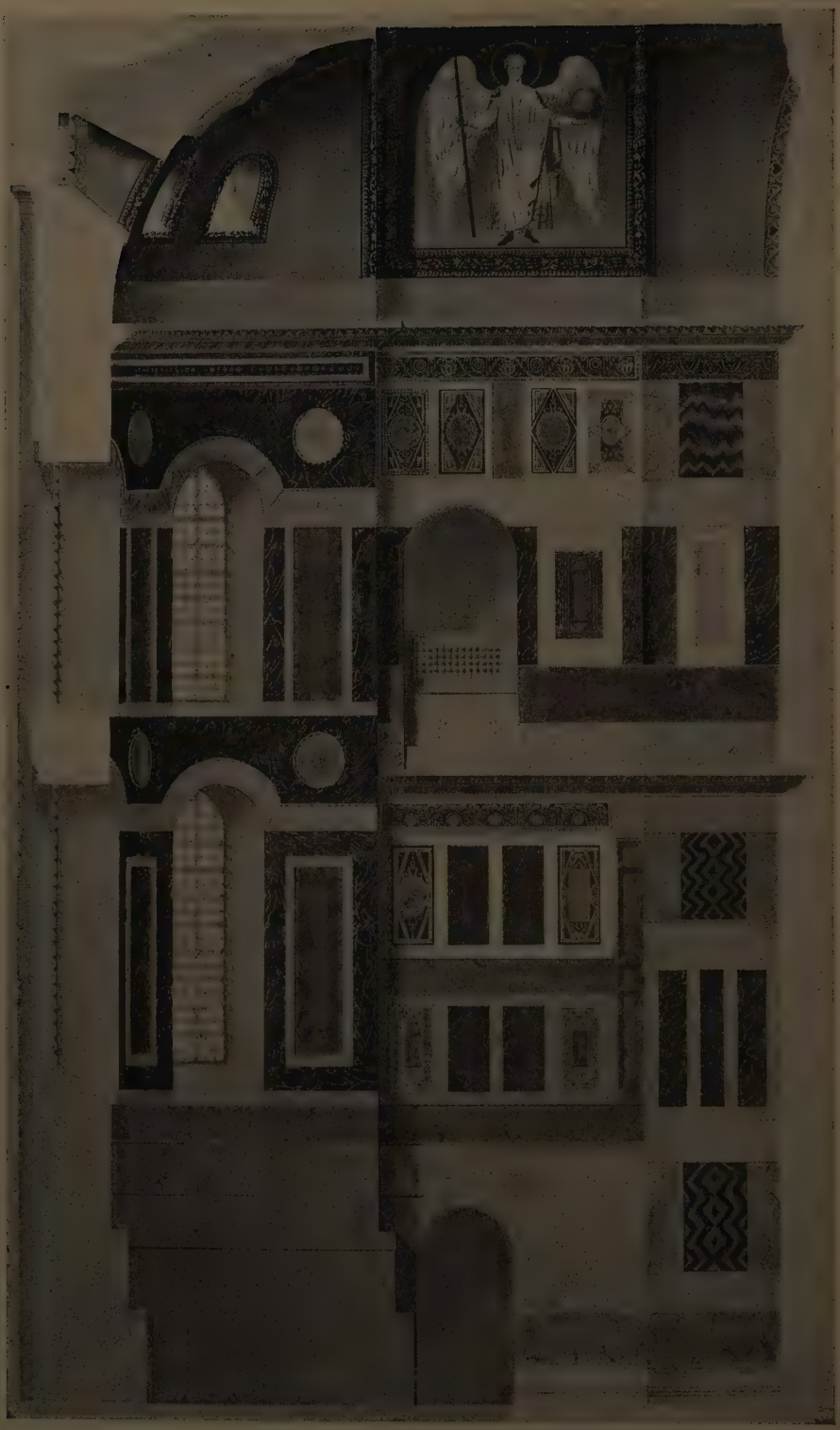
sculpture of the spandrels and archivolts of the great arcades in the first and second galleries, like the sculpture of the capitals, is generally intact. Very frequently the design there was not of so representative a character that the Mohammedan objection to such portrayal of natural forms was excited. Details of that sculpture are shown in Fig. 139, the columns of the lower arcade—those supporting the gynæceum gallery on the north side. It is seen in the general view of the interior (Fig. 135) on the left, behind and above the movable pulpit, which pulpit is seen in Fig. 139 as well. Fig. 140 is one of the vaulting shafts in the gallery,

and Fig. 141 is the upper story of the great narthex, a place now used as a store-room and having its excellent translucent alabasters partly concealed by a hoarding. In this last picture the curious double capitals of primitive Byzantine form take the inquirer back to earlier days and the first dreams of a great imperial church. The treatment of the acanthus-like foliage, abundant in all parts of the building, can be understood by comparing these views. The capitals of the upper arcade, with the sacred monogram, seem to have excited no animosity on the part of the present masters of the church, for such monograms remain uninjured.

The wall of the church is generally faced with elaborate marble incrustation. In some cases large slabs of very rich material are set

141—Upper story of narthex, S. Sophia. (From photo.)

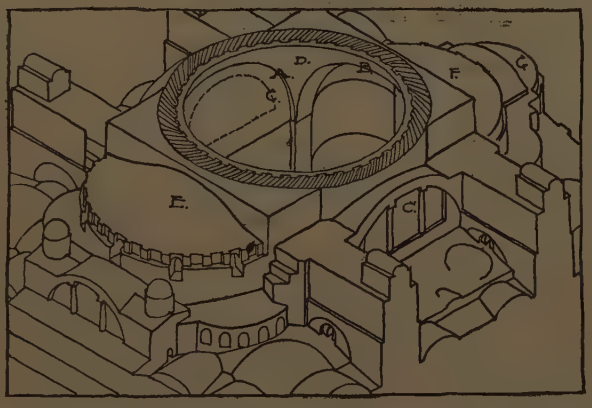
in frames of sculptured white or gray marble, and in other cases the large surface itself is an inlay of pieces arranged like the patterns of a tesselated pavement. Fig. 142 shows a part of the upper south wall of the apse and sanctuary, from the elaborate coloured plate given by Salzenberg, in which it will be noticed that the cherub in the vault above is mosaic of glass on a gold ground, while all the surface, from the



142—Marble incrustation; wall of sanctuary of S. Sophia. (From Salzenberg.)

144—Exterior of S. Sophia, showing the great cupolas and western semi-domes rising above the modern buildings. (From photo.)

cornice to the floor, is faced with marble or other varieties of precious stratified stone, such as Oriental alabaster or what is called, though improperly, onyx; and harder rock, such as porphyry and verde antique. It may be seen in the figure how the great slabs of richly veined stone, sawed from the same block, are set side by side like opened leaves of a book, so that the same pattern is seen on both slabs, one complementing the other, as in three panels at different levels on the extreme right of the figure. The same device is common in other parts of the church, and is found in great beauty in S. Mark's, of Venice. Inlay of one stone by another and actual recessing of carved designs are used to emphasize the colour effect. The apse of Murano, described below, displays a similar alternation of cut panels, with simple slabs of veined stone. And it is to be noted that the use of the hand-saw results in surfaces which are never perfect planes. As the buyer of old furniture complains of the marble slabs of his newly acquired dressing-table or chest of drawers, and requires strips of wood inserted to fill up the hollow curves, soon reconciling himself to the unfamiliar irregularity in view of its charm of effect, so the student of these mediæval interiors finds delight in the rounded surfaces of the wall-linings, and feels that he could never reproduce that charm with the marbles of modern times, brought from the power-mill.

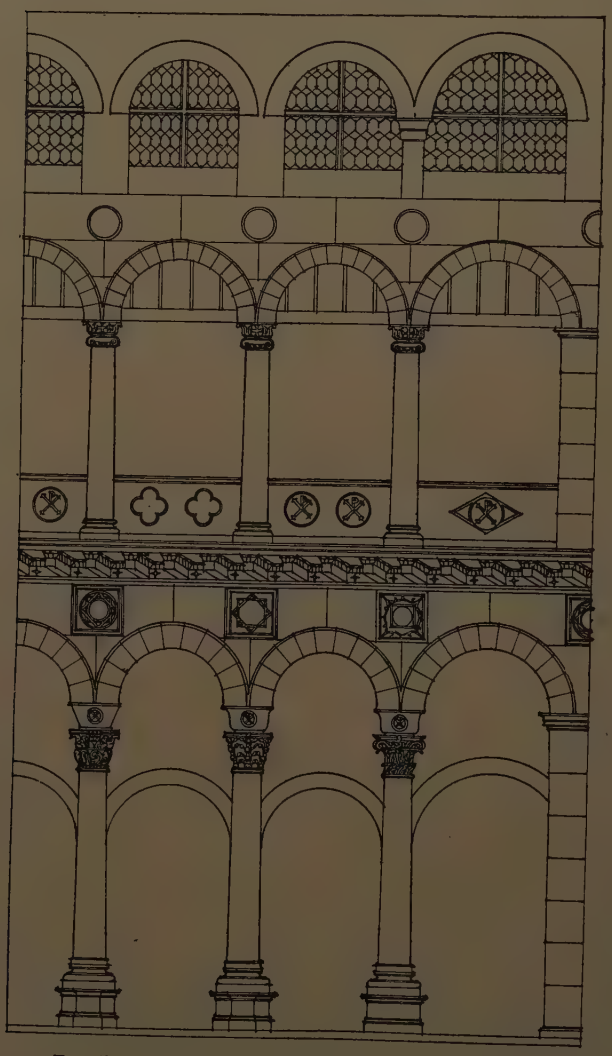


143—System of vaulting, S. Sophia. (Adapted from Choisy, and Lethaby and Swainson; drawn by E. P. C.)

The floor everywhere was paved with marble originally, with splendour equal to that of the wall. The roof of the great narthex at the west end and the lunettes below the vaults are filled with mosaics of glass tesseræ, the figures in full colour on a gold ground; and the carelessness of the Turks has allowed much of their whitewash to disappear, so that these patterns can be partly seen, though their colours are veiled.

Fig. 143 gives a view from above of the system of vaulting in S. Sophia. It is the most trustworthy exposition of such a structure that

can be found. The scheme is that worked out with slight modifications by Lethaby and Swainson, who accepted the enormous buttresses as part of the original structure. The ring at the top of the pendentives, where the surface is levelled off to start the great cupola, is distinguished by hatching. The pendentives, then, are lettered *D*; and *A* denotes the solid arch of 100 feet span on the north side. *B* is the arch which separates the semi-dome on the eastern side from the square of the great cupola, and this is repeated on the western side by an arch hidden beneath the piers. *E* is, then, the outer shell of the western semi-dome, and *F* is the outer shell of the eastern semi-dome beyond which, at *G*, is seen the roof of the small eastern apse. It has been said that Byzantine building, like that of the Roman imperial epoch, assumes the necessity of counterpoising or taking up the thrust of arches by means of walls and partitions within the building itself; and the great buttresses seen here are perhaps the first instance of the contrary practice. Whether these buttresses are actually of the first building, or were added or enlarged at a later date, their necessity



145—Detail of longitudinal section of S. Demetrius, Salonica. (From T. & P.)

146—S. Apollinare in Classe near Ravenna, view from N.W. (From photo.)

147—S. Apollinare in Classe from S.E. (see Fig. 146). (From photo.)

148—Interior of S. Apollinare in Classe (see Figs. 146, 147). (From photo.)

is obvious, and indeed the only surprise felt by one who studies the plan and sections with the aid of photographs, is that involved with the thrust in the other direction, east and west; for it seems as if the ring wall of the semi-dome would be insufficient to take up the thrust of those two arches of 100 feet span.

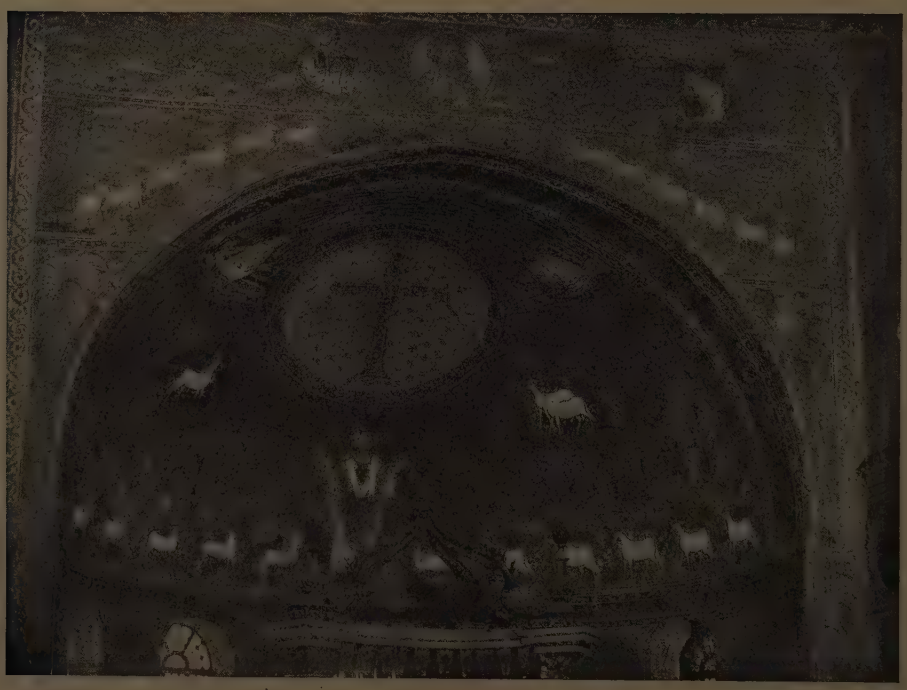
To the student who cherishes Western ideals the remarkable thing about these Byzantine churches is their comparatively uninter-

149—Chapel in S. Apollinare in Classe, at eastern end of north aisle (see Fig. 148). (From photo.)

esting outside. Fig. 144 gives a photograph of the exterior of S. Sophia, showing the later addition of the great minarets, and the large, nearly cubical additions erected by the Turks, which tend to destroy the original effect of the building. It is evident, however, that no dominating and overwhelming presence, as of a great and lofty structure, was dreamed of. We are reminded of the absence from Grecian and from Roman imperial cities of lofty towers of any kind, and this again reminds us of the magnificent, the unmatched Pantheon

of Rome, with its roof rising slowly, step by step, and incapable of impressing any one with a sense of loftiness. Great horizontal dimensions, vast masses harmonized into a perfectly graceful result—that indeed was the Roman, as it was later the Byzantine thought—and these effects are strictly contrary to the mediæval complacency in the thought of very lofty towers pointing skyward, and of steep roofs nearly as high as they.

The church of S. Demetrius at Salonica (the ancient Thessalonica) was left for Christian worship by the Turks at the conquest in the



150—Mosaic of semi-dome, apse of S. Apollinare in Classe (see Fig. 148). (From photo.)

fifteenth century. It has been little altered and remains a five-aisled basilica nearly 200 feet long. The atrium has been entirely modified by the crowding of the town upon it, diminished in size, and the western entrance to the narthex crowded into a corner, while two small courts have been reserved, flanking the sanctuary at the east end of the nave and forming the eastern culmination of the two aisles. This is a most unusual disposition: and if it be of the original scheme is worthy of minute study. Fig. 145 is a part of the longitudinal section showing three bays in the middle of the nave, but

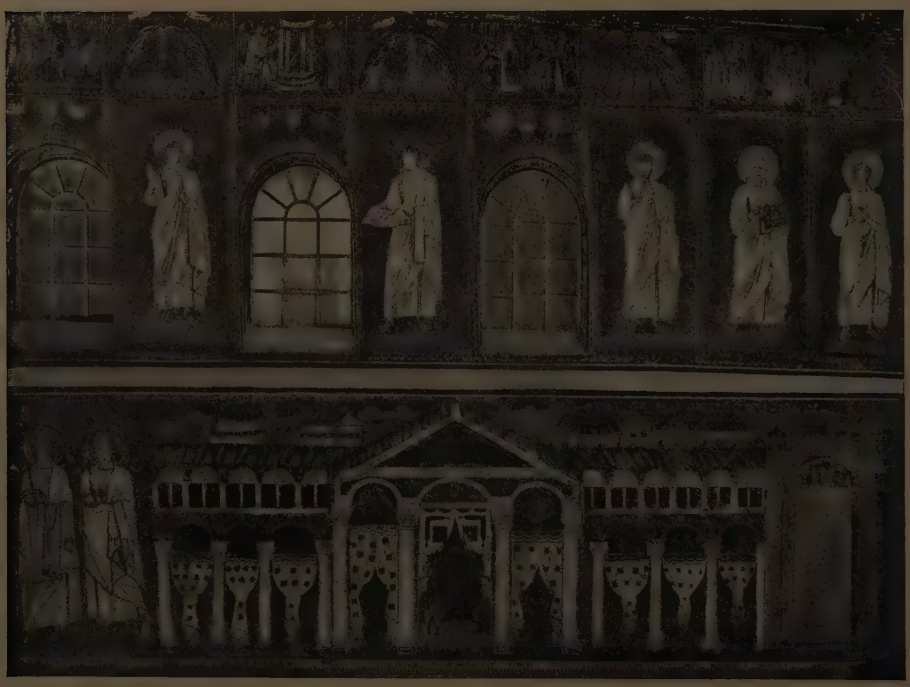
the nave is divided into three great or superior bays, of which a part only of the middle one is shown in our figure. The details are singularly elaborate and are of pure Byzantine character. The comparison with the pictures given above of the great church of S. Sophia at Constantinople will show the strongest possible resemblance to these at Salonica, and it is to be remembered that the

151—S. Apollinare Nuovo, within the city of Ravenna. (From photo.)

city of Salonica, near to the capital of the empire, an important and prosperous place in the sixth century, was likely to receive as much care given to its great buildings as the capital itself.

The basilicas of Ravenna, richer than the churches of similar plan in the East, have preserved their early character far better than those of Rome. S. Apollinare in Classe stands outside the town, in a waste region where stood the ancient seaport, Classis (that is, *Portus Classis*, "The Harbour of the Fleet"). This town was another Venice, in its

152—Interior of S. Apollinare Nuovo, looking S.E. (see Fig. 151). The mosaics on the south wall show a procession starting from the palace given in Fig. 153. (From photo.)



153—Part of south wall above the nave arches, S. Apollinare Nuovo. Mosaic representing a palace. (From photo.)

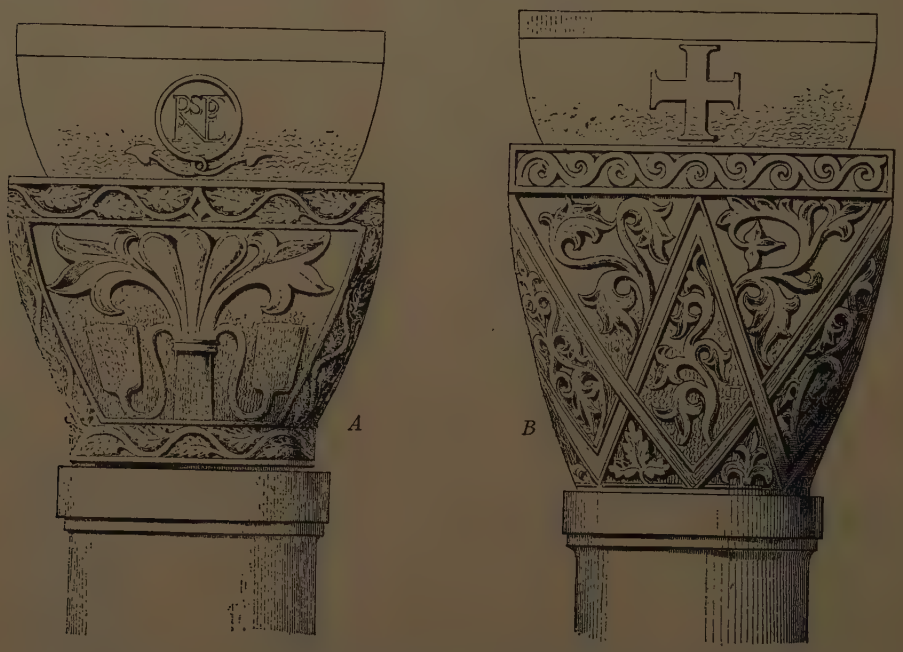
situation among lagoons, made accessible by canals. These have silted up: and Ravenna is four miles from the modern shore of the Adriatic with only a very simple canal reaching its walls.

Fig. 146 shows the basilica of S. Apollinare in Classe as you see it when approaching it from Ravenna itself. It rises without companions from an open, uncultivated plain. In Fig. 147 the view from the south-east is given. The building seen in Fig. 146, standing at right angles with the nave of the church, and the smaller pent-house

154—Bell-tower of S. Agata, Ravenna. (From photo.)

roof seen in Fig. 147, are modifications of the primitive structure. In the first case the ancient narthex has been built upon and enclosed with new walls and a new and higher roof. In Fig. 147 the eastern extremity of each of the two aisles has been rebuilt with a more complete system for the easternmost chapels, and walled off from the aisles, though the apse itself in each case is probably original. The general outside appearance of the church shows fairly well even in detail what the aspect of one of these sixth-century basilicas was intended to be, except in so far as the bishop may have dreamed of a future opportunity for glorifying the east wall with a mosaic or the side wall with inlays

of precious marble. The carrying of the blind arches along both faces of the aisle wall and the clearstory wall alike was the almost inevitable motive of that earliest Romanesque mural decoration. The builders seem never to have wearied of it. It is not a very imposing piece of ornament, but as the chief feature within was the long arcade stretching from narthex to apse, so in the exterior a simulated arcade generally corresponding to the real one within was thought the inevitable finish of the flank wall. The round campanile is probably



155—Capitals from cathedral at Parenzo in Istria (see Fig. 158). (From Lohde.)
A. From the nave. *B*. From the atrium

contemporaneous with the church. This cylindrical form existed in many parts of Europe, as at Pisa, at Gernrode in Germany, and in the Rhenish churches, as seen below in Figs. 352 and 358. In Ireland there are very many. In general these are not belfry-towers, but built for defence, or as a part of the general design of a large church; but it would not require much originality to build them larger, and with an open arcade in the top story.

Fig. 148 shows the interior of S. Apollinare in Classe as seen when one stands in the nave not far from the west end. At the extreme right a kind of sacristy has been made by cutting off the end of the south aisle and a chapel is built up against that wall—a small open chapel

consisting of an engaged ciborium erected above the altar. A similar structure occurs at the eastern end of the northern aisle, and is seen through the columns. Its ciborium or canopy is very elaborate and is so beautiful a structure in itself that it must be given here (see Fig. 149). Authorities agree that the canopy, with its spiral columns, is of the seventh century. The altar itself, though evidently put together in more recent times and generally accepted as of the fifteenth century, has some indications of classical Roman work in the sculpture of the two uprights.

156—Capital from S. Andrea at Ravenna. (From photo.)

The high altar in the apse (Fig. 148) and the canopy above it, with its costly columns of Oriental marble, are of much later work, but the disposition of the chancel itself, with the triumphal arch, the raised floor of the sanctuary, the steps leading to it, and the mosaic decoration of the apse, as well as those of the spandrels above the triumphal arch, are all original in their main features.

Fig. 150 shows these mosaics on a larger scale. Both in the semi-dome of the apse and in the spandrels the employment of sheep in a symbolical sense is noticeable; but those above the arch may be taken as the twelve apostles. The emblems of the four evangelists are in the upper row, though the figure of S. John is much defaced, this emblem coming at the left hand; next to him is S. Luke; and on the opposite side are S. Mark, nearest the centre, and S. Matthew beyond on the extreme right. The strongly marked emblematic head and bust of the Saviour represented as the Man of Sorrows and Acquainted with Grief, fills the circular panel in the axis of the church. In the semi-dome below, the great cross in the large circle has a figure of the Christ in the small round panel at the crossing of the arms, and this with the kneeling figures of the apostles to left and right, and the hand of the Father appearing in a cloud above, are all emblematic of the Transfiguration. We may take the three sheep in the upper row as the three disciples who were witnesses of that event. The sheep of the lower row near the springing of the vault may

be taken as emblematic of the Christian congregation to which S. Apollinaris is preaching.

The walls of the nave on both sides were stripped clean of their adornments of marble and, it is said, of the mosaics also, when in the fifteenth century the lords of Rimini were adorning their church of S. Francis, the famous *Tempio*, for which see Vol. III. After that destruction the walls of the nave were blank, as it appears, until the eighteenth century, when the present system of portraits of the bishops was begun. The series has been continued to the present day, containing even portraits of bishops of our own time. In spite of these modernizations and in spite of the disappearance of colour adornment from the interior, even including the ancient painting of the roof-timbers, the church remains the most interesting basilica in Europe. Unquestionably it is capable of giving more of the ancient feeling, the appearance of a church in the seventh century, than any other structure.

157—Capital of midwall shaft, old Cathedral of Trèves (Trier). (From G. Baldwin Brown.)

158—Plan of cathedral at Parenzo in Istria. (From Lohde.)

The church of S. Apollinare Nuovo is in the city of Ravenna and is known to have been built by Theodoric, the Gothic king of Italy, and dedicated to S. Martin. It was then called S. Martin *in Cœlo Aureo*, "with a golden roof." All vestige of that ancient gilding is lost since the putting in place of the panelled ceiling of the nave in 1611. The church has but little interest in its exterior aspect

159—Atrium of cathedral at Parenzo (see Fig. 158). (From Jackson.)

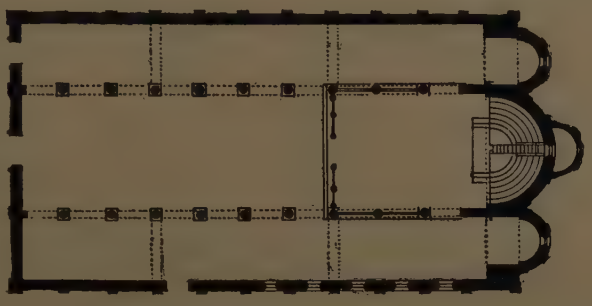
except the atrium, which also has been modernized. The very interesting circular campanile is shown in Fig. 151. Fig. 152 shows the interior as viewed by a person standing in the north aisle near the west end. The large holy-water basin of fifteenth century design is in the foreground. In other respects the features of the church which are in strong light are original—the columns and their very interesting capitals, with their abacus blocks rising above them to carry the abutments of two arches each, the pulpit on

the south side of the nave, and, most of all, the splendid mosaic in which the long procession of saints may be thought to be marching toward the east end and the altar. Dimly seen on the extreme right is a pictured building in the flat wall of the mosaic. This is assumed to be a representation of the Palace of Theodoric. The whole of

160—Part of apse, cathedral of Parenzo in Istria. (From Jackson.)

this picture of the ancient palace is reproduced in Fig. 153. It is, of course, no faithful or even very suggestive rendering of the sixth-century building itself. It conveys an idea merely of what the designer of the mosaic thought was befitting a royal palace—arcades with great embroidered curtains hanging between the pillars, and an upper story of less stately pretensions—he is satisfied with that and has explained

his meaning sufficiently when he has written PALA TIUM in capitals on the frieze over the central doorway. As an instance of the decorative sense of the colour designers in the sixth century, and perhaps as an instance of their indifference to the representation of natural fact, this picture is to be welcomed. It throws light on the question of the treatment of costume and of the human figure itself in the great bands of marching saints near at hand. A procession of virgin saints is seen on the wall above the north arcade. This latter procession seems to come from a walled city which is generally understood as representing Classe, though there is no assurance of this. In another part of the frieze is a representation of the three kings of the East bringing offerings to the Child who is seated on the Madonna's knee. The Madonna is enthroned and accompanied by angels, two on either side. These mosaics are by far the most important series known to us of early Christian pictorial designing. The basilicas of Rome have many separate mosaics of great charm, and of generally unquestioned antiquity even in their minute details, but in no case are they of equal importance, at least in the sense of their having so much fine early figure composition, in its original place, and complete in its original sequence.



161—Plan of cathedral of Torcello (see Fig. 162).

The round bell-towers of Ravenna are as important as the square campaniles of Rome and generally of earlier date; often belonging to the first scheme of the church, while the square towers are of the later Romanesque style. The little church of S. Agata has such a round tower of unusual beauty of proportion. It is given in Fig. 154.

One of the most important features of the early Romanesque buildings east and west is the second or subsidiary capital. It has been called by various names, one of the most common being the word *dosseret*, a term which should be avoided because it does not express the idea of a superimposed mass so much as of something set up behind, or at the back of something else. Thus, the word *dosser* in the

sense of a hanging of splendid stuff at the back of a chair of state or a bishop's throne, is the same word without the termination which expresses the diminutive. Some such word as supercapital or abacus-block would be better, viewing the member either as a second feature or as a part of the capital itself. This supercapital is one of the most important features of the earlier Romanesque styles both east and west. Fig. 155 shows two of these capitals in the cathedral at Parenzo (see Figs. 158, 159, 160). In this case, however, they are not excessive in form or size. Their purpose is to carry the abutments of arches —two arches to each capital—and having this work to do they are commonly wide in proportion to the size of the capital proper. Fig. 156 shows the extreme tendency of such a motive, for in this early and rude basilica, S. Andrea at Ravenna, the capital itself is reduced to a mere ring with two undeveloped volutes, and the supercapital has become a

162—The public square, Torcello, in the Venetian Lagoon; on the left the cathedral and a part of the townhall; on the right, S. Fosca. (From photo.)

large and massive block. The rectangular form of the top of this block is not carried insensibly to the size and form of the top of the shaft: it is a tile, or rather a brick, upon a post and nothing else. But in S. Apollinare in Classe (Fig. 148) and at Parenzo, the form is far more elaborated; and in S. Apollinare Nuovo (Fig. 152) the supercapital, though very large and heavy, is accepted as expressing an obvious

truth, namely, that the wide and massive double abutment whence spring two adjoining arches should not be allowed to rest upon the delicate abacus of the sculptured capital itself. We are reminded of the use in Egyptian architecture of a block set upon the capital to preserve the delicate outer edge of the bell from the direct burden of the epistyle (see Vol. I, Figs. 18, 25, 39, 44, and others).

The obvious necessity of this supercapital in cases where the wall is much thicker than the width of the column which has to support

163—The bishop's throne, in the apse of Torcello Cathedral. (From photo.)

a part of it, as the abutments of two arches built in the wall, is explained by the device occasionally adopted in very simple and unpretending church edifices. Thus, Fig. 157 shows a device used at Trier or Treves, where a single rather slender shaft is made to carry a wall much more than twice its thickness, by the use of a capital three times as large horizontally in one direction as in the other.

The beautiful cathedral of Parenzo in Istria dates from the middle of the sixth century, and its somewhat lonely situation in a country not markedly prosperous in the modern European sense has kept it from serious rebuilding. It is as completely Byzantine in character as S. Apollinare in Classe, and better preserved than all except one or two early basilicas in Italy. It has a small atrium, whose compluvium (if the

word may be used for the open court in this case) is small in proportion to the covered galleries which surround it: which however are not intact. The baptistery is attached to this atrium on the side farthest from the west front of the church, in what appears to have been the orthodox ancient manner, and the bell-tower is built against the wall of the baptistery and farther west—making an unusual but not unpicturesque group. The plan (Fig. 158) shows these peculiarities and shows also the not well understood vaulted building which is used for the sacristy and its curious eastern additions, which seem to have been built in the form they assume with some reference to the apse-like structure of the eastern end common to nave or aisle or chapel. Fig. 159 shows the atrium. The slight remains of mosaic in the gable of the west front are indicated in Mr. Jackson's drawing. Otherwise the atrium retains no ornamentation except the sculptured capitals, which are of Byzantine type, as shown in this picture.

164—Capital of the cathedral, Torcello. (From Ruskin.)

Fig. 160 shows the interior of the church, from a point near the high altar. The great ciborium, of which the two southern columns only are seen, nearly fills the space allowed for the choir, and indeed there is nothing beyond it except the permanent marble seats of the clergy, with the bishop's throne at the eastern end and space enough to serve as a passageway to these seats. So large a canopy with its supporting shafts has to be accepted as a part of the architecture of the building. No other is known to exist which is as large as this, whether in proportion to the church or to the choir itself. The nave is very simple, but equal in beauty and in delicacy of finish to the basilicas of Ravenna, though so much smaller than they—only 28 feet wide.

165—Detail of the capital (Fig. 164). (From Ruskin.)

Fig. 161 is a plan of the cathedral at Torcello, that deserted island

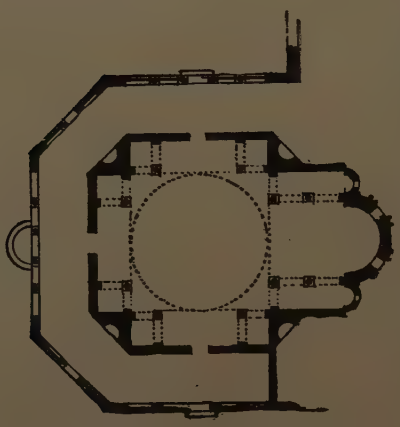
city in the Venetian lagoon. Fig. 162 shows the little public square of Torcello as it was in 1860, with the municipal palace on the left; the baptistery and the round church of S. Fosca on the right, and the bell-tower showing above it; and in the middle the cathedral with the covered way which leads from its atrium to S. Fosca. The plan of the group is easy to understand, and the fact that the baptistery is not opposite to the west front requires no remark, for the cathedral was certainly rebuilt in the eleventh century and this without any care for architectural distribution. The interior, however, is full of interest. Fig. 163

166—Byzantine sculpture, chancel rail, Torcello cathedral. (From photo.)

shows the bishop's throne with the rings of seats on either side, filling the whole curved part of the apse. This is probably the only existing structure of the kind which remains in its original state. The patching and repairing has been limited to such work as would enable persons to mount the stair and to walk along the seats—nothing destructive in the way of restoration has been attempted. The slabs of alabaster from Oriental quarries still line the walls of the apse as they have done for over a thousand years.

The mosaics in the apse, above the facing of alabaster, are slightly indicated. The church is in extremely ill-kept condition, the walls roughly plastered. Very heavy tie-rods inserted above the capitals

steady the arches of the nave, and still larger ties stretch across the aisle itself. There is a rood-screen consisting of six slender columns and supporting a broad and massive girder, richly painted but aiding the ties across the nave to break up completely all satisfactory view of the apse itself and its decorations. The capitals are very early Byzantine in character, with leafage reminiscent of the classical type of the fourth century. Fig. 164 is a capital of this basilica, engraved with extreme delicacy by Le Keux from Ruskin's drawing, and published in 1853. Fig. 165 gives one of the smaller upright anthemions or stems of leafage springing from the necking of the same capital or another of the same ordonnance. These drawings by Ruskin, made with affectionate enthusiasm and with the avowed purpose of preserving accurate renderings of delicate sculpture, such as he saw destroyed every day, are to be trusted implicitly. In days of easy and greatly perfected photography it would be difficult to persuade any one to devote such patient care to the task of minute reproduction. The capitals of the church are all different, and yet they are varied from a single well-recognized type. The amount of undercutting is very unusual, for in Fig. 165 the little shadows mark plainly a separation of the leaf stems from the bell. It is probably inaccurate to speak of this leafage as taken from the acanthus, for the acanthus is essentially a prickly plant with very sharp points to its leaves, and several hundred points to each compound leaf, each capable of inflicting a decided sting. The rounded lobes of which Ruskin himself speaks [23] should have warned him from the expression "acanthus" foliage. Little plants of far more humble rank are more likely the original type from which they were studied. There are sculptures of later and still purely Byzantine character, as in the chancel rail; one panel of which is shown in Fig. 166.



167—Plan of S. Fosca, Torcello, in the Venetian Lagoon. (See Fig. 162.)

That which was once the baptistery of the cathedral of Torcello is seen in Fig. 162. It is now a separate church with a separate dedication to S. Fosca and is of unsettled date. It can hardly be classed

[23] See Stones of Venice, Vol. II, Chap. II, p. 15 of the original edition, 1853.

with the early round churches treated in Chap. III, and is probably a building erected in the tenth century with the express purpose of serving as a baptistery. It is also not strictly a round church, the apse holding so important a position in it. The plan as it now exists is given in Fig. 167, and the comparison with the general view (Fig. 162) shows fairly well the general disposition of the church proper and the existing narthex occupying five sides of an octagon. Fig. 168 shows the south flank of the church, and the very beautiful apse which is probably the latest part of the building. The Venetian archæologists are in doubt as to the date of the church; but the apse has all the marks of a somewhat late period. The appearance of so peculiar and unrelated a system of design tends to confuse the student of artistic evolution. The

168—South flank of S. Fosca, Torcello. (From photo.)

decoration by means of simple brick work and even this without elaborate cast patterns, mouldings, checkers, and the like, was in this case helped out by inserted panels of rich marble, which are seen in that frieze which follows five sides of the apse above the upper arcade. A similar decoration is found in the church of S. Donato at Murano, an island close at hand in the Venetian lagoon; and this apse has always been put down as belonging to the tenth or to the eleventh century. It is more convenient, on the whole, to treat these buildings in Book IX in connection with the developed Romanesque of Italy.

The famous church of S. Mark, Venice, in the course of recent restorations, was explored rather carefully, to ascertain its original character as a tenth-century Byzantine church. In different parts of the

marble-sheathed exterior, accidental gaps and other more deliberately planned openings were utilized, and the brick walls and marble fittings of the round-arched, semi-Byzantine style of the tenth century were revealed. Drawings were made which were deposited in the Civic Museum of Venice[24] and some of these are reproduced in the great work published by Ongania.[25] The illustration in Volume III which gives the church in its nineteenth-century condition, will show why this façade, the front on the piazza, could not well be studied in this fashion. It is too rich,

169—Restoration of the twelfth-century front of S. Mark's Church, Venice. (From Ongania.)

too elaborately adorned, too much a museum of mosaics, precious marbles, and alabaster, and pieces brought from far of delicate, ancient sculpture, to be overhauled in any such radical fashion. Moreover, the very ordonnance of deep porches projecting far upon the piazza from the higher front of the church, is almost wholly of later construction. The marbles brought from the East could not be housed by incrustation in the old walls; a new edifice was built of them forming a new façade. It was, therefore, at the north and south sides of the church, the flanks adjoining the great west front, that those researches were carried on with some vigour; and the drawings named above are faithful reproductions of those flanks. Then, from material thus made available, a restored façade was drawn out by Signore Pellanda, which

[24] Museo Civico (see what is said of the Fondaco dei Turchi, Fig. 251).

[25] La Basilica di San Marco di Venezia; Venice, 1881–88 (folio and quarto, different authors).

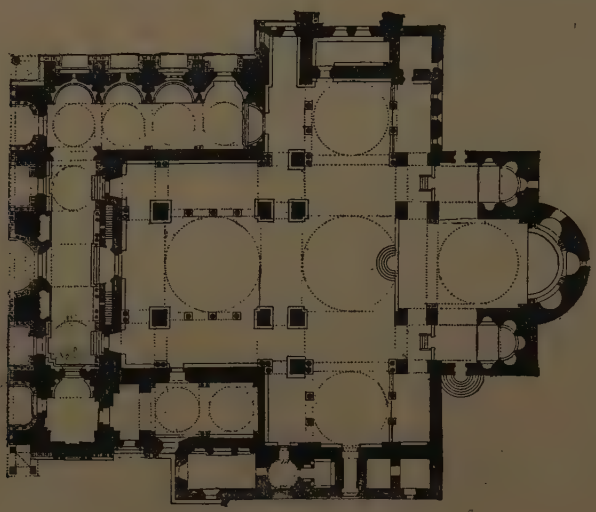
is reproduced in Fig. 169. There are not many conjectural restorations which are as nearly authentic as this.

The plan, and the general disposition of the interior, can hardly have changed. We have, therefore, to accept S. Mark's as a simple, though large and somewhat unusual domed church, differing from others in the unusual size and distribution of its narthex, which is carried along the west front, and the north and south sides in part; and also from the complete working out of the domical idea in the roofing. Everywhere there are cupolas and half domes. Tunnel vaults are subordinate, and fill the space between the domed squares. Groined

170—Interior of S. Mark's Church, Venice. (From photo.)

vaults are absolutely unknown in the church. Fig. 170 shows the interior so that the vaulting alone is in full view, and when the church is regarded in this way, it is still a ninth-century semi-Byzantine church. The mosaics only have been very largely remade, and repaired and altered, even when the early design remains in place. But the effect of curved roofs, covered everywhere with a ground made up of small tesseræ of gilded glass upon which, as upon a sky, are relieved the figures of the sacred story—all this remains from the earliest date

upon which they could have been said to have been finished. Fig. 171 gives the plan, and by comparison of this with the interior view it will



171—Plan of S. Mark's Church, Venice.

be seen that the westernmost of the three largest cupolas is overhead in the view and is therefore not visible. The cupolas of the transept are behind the great piers at the left and at the right.

Stone cistern curb, from Concordia (Venetia), Italy; now in Venice. (From Ongania, V. P.)

BOOK VIII—MOSLEM ARCHITECTURE

CHAPTER I

HISTORICAL SKETCH

THE Moslem conquest of the country between Arabia and Egypt on the south, and Asia Minor on the north, was effected in the main between 633 and 638 A.D. It was accompanied and followed by the building of new mosques as well as by the seizure and alteration of Christian churches. New cities, as Bagdad, were founded, and new quarters of old towns were built.

In 638 Egypt was invaded, the town of Fostat (now called Old Cairo) was founded, and a mosque built within its limits.

In all these lands the workmen of the conquered races were employed upon the buildings, the mosques as well as the civic and domestic structures. There is no sign of peculiar methods of building or peculiar ways of planning or of decorating introduced by the invaders, or in the path of their armies.

The Arabs were true Semites, and as such were not a race of original thought in building, and their relatively low stage of material civilization kept them inferior even to other Semites—to the Phœnicians and the Hebrews—as builders and decorators. Neither the mechanical arts nor the arts of design, except in weaving and needlework, and the chasing of metals, all in simple patterns, can be said to have been cultivated by the Arabs in their own country or pursued by them when becoming citizens of new lands. Throughout the Moslem domain, then, from the African desert to the frontiers of Persia, the art of the new period, from 635 on, is that of the previous half-century, but modified by new conditions. That is to say, it is, in its more pretentious efforts, mainly Byzantine, but Byzantine as influenced by the special religious requirements of the invaders, and as modified gradually to suit the requirements of a people who had no serious building traditions, but, like true Semites, cared for colour and colour

patterns. Their plans for mosque and palace were of barbaric simplicity; but their surface adornment was significant. The conquerors understood something of industrial art—metal work, inlay, weaving, and embroidery—but their religion forbade, or at least discouraged, the representation of the human form or of animals; and even of plants with imitative or accurate representation.

In lands which had been ruled by Rome, and among peoples made up of the different elements present in Roman provinces, the distinction between Byzantine art and the Moslem art of the earlier centuries is that between the comparative freedom and play of fancy allowed the Christians in decorative design, and the rigid and unalterable system adopted by those who were working under Moslem rule. The forms used in building were the same at first; the plans change only as from the high-wrought organization of the heirs of Rome to the primal expedients natural to desert tribes become conquerors; but the decoration has all the difference to be expected between those men who undertook to relate the history and legends of their church in form and colour, and those men to whom all such methods of wall decoration were denied.

In 642 Persia was invaded and the Sassanian dynasty came to an end. Thereafter, in the buildings undertaken east of the Persian Gulf, the late Persian style continued to prevail under the Moslem supremacy. Here, for the first time, a non-Roman state and a race of independent artistic ability were dragged into the new Moslem world. The Persians, a non-Semitic people, with a strong disposition to represent the human form, animals, and plants, with the ability to produce decorative results in colour and in form of a grace and variety surpassing that of Europe, had their art so far modified by the Moslem conquest that they have never reached the power of representing natural form, life, movement, the actions and the incidents of life, with anything approaching the power of Europe or of Eastern Asia. On the other hand, they have developed that marvellous art of colour decoration which is alone in its beauty and variety in all our experience.

North Africa was occupied by the Arab conquerors between 655 and 685, but the previously forlorn condition of the country, wasted by Vandal invasion, Byzantine reconquest, and border warfare with the desert tribes, forbade any rapid growth of a peculiar Moorish style in design or in building. In 710 began the invasion of the Spanish peninsula from North Africa, and the next fifty years saw the development

of the true western Moslem style; culminating in the great mosque at Cordova begun 786 A.D.

The early architecture of the Moslems may, then, be divided into the Syrian, the Egyptian or Cairene, the Persian, and the North African and Hispano-Moorish styles. The rapid political changes under the rule of the Caliphs, the separation of the west from the east in government, and, in Persia, the diversion of the special religious faith from that of the rest of the Mohammedan world, emphasized these divisions. Everywhere, however, we must observe the absence of any especially marked artistic influence brought by the new military power. That power was wielded by a low civilization, materially speaking: and as the Byzantine architecture had been founded upon late Persian and Roman imperial building, taken together, so the Moslem art drew its original inspiration from the new East, the two great rival states of the seventh century, the Byzantine Empire and Persia.

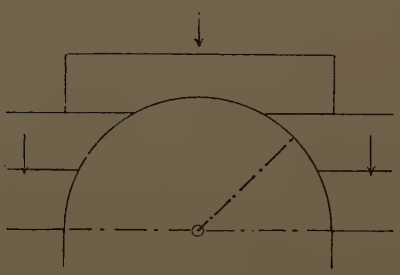
In the form of the early mosque, the plan of general acceptance is the simplest conceivable—a mere enlargement of the familiar house plan of Asia Minor which, in Syria, we have found modified by the free use of squared stone. Rows of marble or stone pillars replace the tree trunks of the north and the stone arches of Syria, to carry a flat roof; and this roof, which in the mountain dwellings of Asia Minor is of earth piled upon wooden trunks or beams, or light brick vaulting, or of stone slabs farther south, is hardly more organized or more architectural in the mosques. The columns of the earliest mosques were easy to take over from Roman buildings: and the built-up piers of the mosque of Ibn Tūlūn in Cairo, in the ninth century, were a surprising innovation.

All styles of Moslem art include the free use of the arch.[1] Whether finding it built of stone voussoirs by the Syrian builders, or, more

[1] The arch, no matter what its form, is a device for changing the direction of a vertical force, of pressure or weight, and of throwing it off horizontally or diagonally upon the abutments on both sides. The form of the arch is indifferent, but its construction is essential to its nature. Inasmuch as the term is derived from arc, a curved line, it has been found that many writers speak of a corbel-arch or false arch or seeming arch when a structure is indicated like that shown in Fig. 172, which resembles the diagrams of Egyptian curved ceilings in Vol. I, Fig. 10. It is necessary, however, to avoid the use of the term arch for such constructions as this. An arch is that which does not merely divide the pressure indicated by the central arrow in Fig. 172, into two vertical pressures as shown by the arrows on the sides of the cut; it is necessary that the vertical pressure, no matter where reaching the arch, shall be deflected into diagonal or horizontal pressures as shown by the arrows in *A*, Fig. 173.

roughly, of brick or stone by the Copts of Egypt, or with excellent hard brick and strong mortar by the Persians, or in North Africa and Spain in the Roman buildings which were everywhere in existence, the Moslems had only to copy what already existed.

In Syria the pointed arch is rare, but it is not unknown from the earliest times of Moslem art. In Egypt, where the Copts had used it freely, it is almost the rule. In North Africa and Spain the arches are always drawn from one centre, but sometimes they are interlaced, so as to produce the appearance of pointed arches by the intersection of one round archivolt by another. In Persia, the four-centred arch is common from an early time, and when this form is not in use the arches are pointed as in Egypt. In India only is the real arch uncommon, and when used it is evidently an importation from Persia.

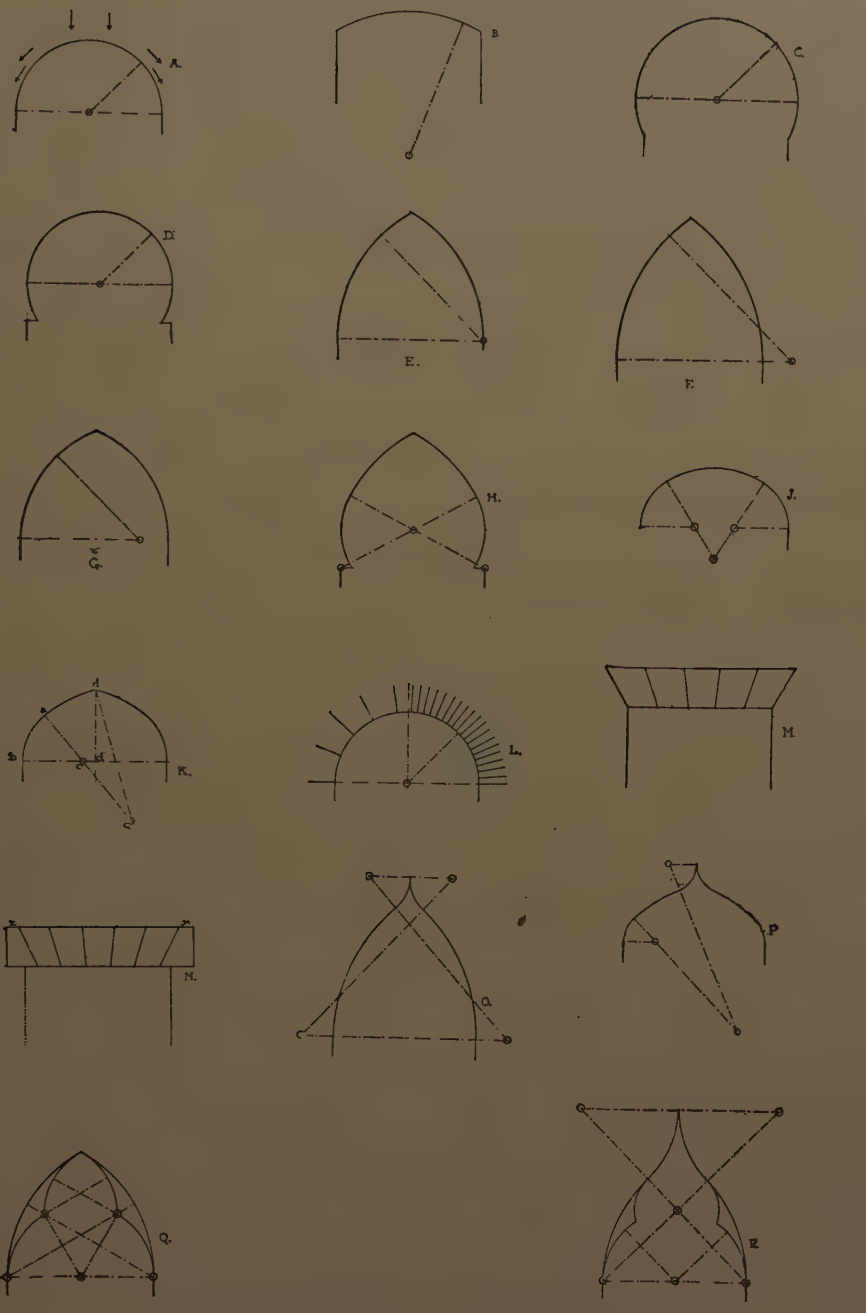


172—Diagram of apparent or false arch, obtained by corbelling. (Drawn by E. P. C.)

It is necessary to describe these different forms with a view to their origin and their nature.

The round arch so common in Roman work that it is the rule, and almost equally the rule in Byzantine building, is laid out by drawing a curve from a single centre, as in *A*, Fig. 173. In these diagrams it is not necessary to give more than a single curve, which may pass for the intrados of the arch; that is, for the line representing the lower or innermost face, the soffit, as it is often called. The segmental arch is constructed also upon a curve drawn from a single centre, as in *B*, Fig. 173. It differs from the round arch in having the vertical line of the jamb or the abutment cut the curve at a sharp angle, leaving only a segment of the circle in use. The horseshoe arch also is laid out upon a single curve drawn from a single centre, but the curve is carried further than the half circle, and may form an angle with the abutment, as seen at *C*, or may be cut by a corbel-like projection from the abutment, as at *D*. The probable origin of this form is spoken of in the chapter on Egyptian Moslem art.

The pointed arch is in reality the joining of two oblique or rampant arches, each of which may be called a half arch. It is also spoken of by some writers on construction as in reality a curved gable rather than an arch, but this use of terms overlooks the inherent quality of an



173—Different forms of arches. (Drawn by E. P. C.)

arch, namely, as defined above, its nature as a mechanical device for throwing off horizontally or at a slope that which has been a vertical force. It is a true arch of which the form is obtained by drawing curves from two centres. *E* shows what is called the equilateral pointed arch, in which the centre is at the point where the springing line and the vertical line of the jamb meet. *F* shows the acute, or in English work the lancet arch, in which the centres are more distant from the lines of the jamb than the width of the opening. *G* shows what may be called an obtuse, or blunt-pointed arch, in which the centres are nearer together and the radius of each curve is less than the span of the arch. A pointed arch may also be a horseshoe arch, as shown in *H*.

Three-centred arches are laid out by a curve drawn as shown in *J*, where the flat arc of large curve is drawn from a distant centre on the axis of the opening, and the two centres of the smaller curves are found upon the radii drawn from that centre to the curve at the point of intersection of its larger and smaller arcs.

The four-centred arch is drawn by the method shown in *K*, the same pains being taken to make the curves tangent to one another, and this by finding the centres of the curves on the same line to serve as radius.

In all these forms the assumption is that a series of wedge-shaped solids are so divided that each prevents the others from falling inward. This scheme is shown in *L*. It is evident, however, that if we use very small voussoirs, such as bricks, and lay them in strong mortar, the arch will soon become a kind of curved beam in which there are no longer separate solids, but a single mass, which, however, resists and resolves a vertical pressure precisely as if it were built of dry stone blocks without mortar. This explains the utility of the flat arch, *M*. The diagram shows, indeed, five voussoirs acting precisely as if they formed the parts of an ordinary or segmental arch (*B*), but it may also be built of bricks and strong mortar and will then be very nearly a lintel.

The difference between it and a lintel is in this, however. The whole horizontal band of material taken together is kept from falling in by its shape as of a wedge. If the structure were laid out as in *N*, the flat arch would be from *x* to *y* only and the two end blocks would each bear directly upon the abutments or jamb and these parts of the structure would become what are called the skew-backs. This is carried a step farther by the primitive arch at Alea in Arcadia, shown

in Vol. I, Fig. 87, at *C*. As explained in the text in connection with that figure, "it is always an arch when the stones are so cut and set as to transmit a vertical pressure sidewise."

In all curved arches it is possible to vary their form by other curves tangent to the principal curve of the arch.

O shows what is called a reversed curve or sometimes an accolade, applied to an ordinary pointed arch. P shows the same reversed curve applied to a four-centred arch. In each of these cases the number of centres is increased by two. *O* has now four centres; *P* has six centres, the same necessity of keeping those centres on the radius lines being noticeable. A still further modification is seen in the use of tangent curves within the arch, as at *Q* and also at *R*.

Finally, *R* shows this modification, which is called cusping, applied to an arch with a reversed curve as in *O*, where it appears that we have no less than eight centres in use. Much more elaborate arches were found in Spanish Moslem architecture, where a whole series or ring of cusps adorns the soffit of an arch; and again in highly developed Gothic architecture, where the system of window tracery depends for its picturesque effect very largely on the free use of cusps.

CHAPTER II

MOSLEM SYRIA

FOR us the first Moslem building is the octagonal mosque at Jerusalem, called incorrectly the Mosque of Omar. Its local name is Kubbet es Sakra, "the Dome of the Rock." The plan is a regular octagon; with the high central part or nave, though 60 feet wide, yet so small in proportion to the outside diameter, about 173 feet, that a system of piers and columns is employed

174—Interior of Mosque of Omar, or Dome of the Rock, Jerusalem. (From photo.)

to support the flat roof, dividing the space into two aisles. The inner ring of four piers and twelve columns, as seen in Fig. 174, carries the dome, raised upon a low and simple drum, as seen in Fig. 175. This scheme dates undoubtedly from the first foundation of the mosque in

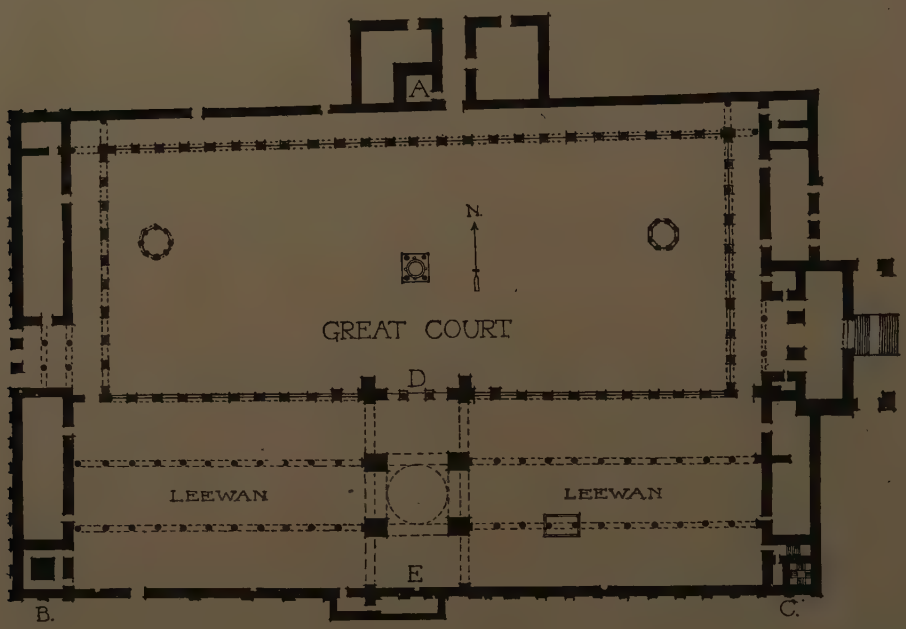
688 A.D. The rock itself, concerning which there are many legends, Jewish, Mohammedan, and Christian, is plainly visible under the roofs which protect it. The flat surface is exposed to view, surrounded by a wooden parapet or screen; and a second screen of wrought iron is secured between the columns of the circular arcade which supports the dome; but both of these barriers are of late work, the one Christian of the time of the Crusaders' kingdom, the other of still more recent Syrian workmanship.

Fig. 174 shows the interior of the mosque from the central point, above the rock itself, and with a small part of the dome visible above,

175—Exterior of Dome of the Rock (see Fig. 174); the Dome of David on the left. (From photo.)

which dome—a light structure of wood—has been replaced at different periods. The columns are undoubtedly ancient, the shafts taken from Roman buildings, the capitals of varied style, and in their unaltered state. So is, in the main, the marble inlay of the piers between the columns; but the tinting of the voussoirs in the arches above has been renewed and altered many times. The outermost wall is pierced with a great number of window openings, and with four doorways, each of which has a porch of architectural character, as seen in Fig. 175. The window openings are filled with plaster window-frames, and tinted glass of the kind described below; but this, together with the more decorative sheathing of the exterior and the inscription from the Koran

above the windows, is of the later Middle Ages, probably of the thirteenth century. The little pavilion on the left in Fig. 175 is known as the Throne of David, or Judgment Place of David. There seems no doubt that it was built originally at about the same time as the mosque itself, but so small and so purely decorative a building must have been repaired and perhaps altered in design on different occasions. What is interesting about the collocation of these two buildings is the complete adoption of the Romano-Persian type in these very early religious



175A—General plan of the great mosque at Damascus, before the fire of 1893. A, great northern minaret. B, southwestern minaret. C, eastern minaret. D, north front of transept, with triple arch of entrance, and triple window above. E, principal mihrab or niche supposed to point to Mecca. Three other niches in the same wall serve for Moslems of different sects or races. (Drawn by E. P. C.)

edifices. On this one occasion, the Moslem invader was minded to encourage the Syrian builders to build as they knew best how to build, and the result is a mosque which has a really architectural scheme.

This, however, is an exception. The great mosque at Damascus is of the usual primitive type. It is of the early years of the eighth century, but little of it remains in its original state except some of the inner colonnades. The plan, however, may be thought to be un-

changed, see Fig. 175A. An oblong of about 300 by 430 feet is occupied half by an open court, on three sides of which a single arcaded gallery opens, while on the fourth side the great hall of prayer, 125 by 430 feet, is divided into three aisles by rows of columns and arches, as in the general arrangement of a great mosque (see Chap. III). The two colonnades of the place of prayer are shown in Fig. 176. Classical Corinthian capitals are set upon shafts which are not always of the right size to receive them; but upon the capitals extremely plain super-capitals are arranged to take the rough masonry of the arches. There are two such arcades, as is seen in Fig. 176, which is a view looking toward the south-east; the unseen arcade opening on the court, on the left of the spectator, allowing the full light to fall upon the columns of the inner rows. That arcade on the court has been rebuilt many times, and is on two sides a perfectly plain masonry wall with large arched openings, while on the other sides there are vestiges of the early magnificence of the building in the sculpture which still remains partly visible upon the marble piers (see Fig. 177). The archways of the great entrance, too, are adorned with splendid columns and some rich decoration, a part of which is probably of the eighth century; while another part is of the Christian epoch, the remains of a church which the mosque has replaced.

176—Interior of great mosque, Damascus, the place of prayer. (From photo.)

A lofty transept, E D in plan, crosses the three aisles from north to south. Except for this, the roof of the place of prayer has no architectural character. It is built like a floor, with heavy beams,

richly painted where they are seen from below, and was covered in the fifteenth century by steep roofs, one for each aisle.

At a much later time, in the remote city of Baalbek, called by the Greco-Roman settlers Heliopolis, a great mosque was built which, though completed, according to the inscription, in 1294 A.D., is in ruins. Fig. 178 shows the arcades of this mosque, in which it is deeply interesting to see the Roman Corinthian capitals transplanted from Roman pagan temples and still preserving much of their classical character as works of sculpture, but used to support an arcade of pointed arches once surmounted by a flat mediæval roof. Another at the same place, and also of the thirteenth century, is still more completely ruined—unroofed and with but little of the plan traceable.

177—Marble piers on the court, great mosque of Damascus. (From photo.)

The pointed arch, as seen in the early rebuilding of El-Aksa at Jerusalem (see Fig. 72) and again at Baalbek, was used very commonly in the eighth century. Its often asserted origin, in the Coptic church-building of Egypt, cannot be demonstrated, although the form seems identified with the land: on the other hand the chosen form of the Syrian builders was generally semicircular, and, at a later time, with the continued curve, giving the "horseshoe" form, as described below. The smaller mosques of Syria are often of the character shown in Fig. 179. The massive character of the building, squared blocks of carefully dressed stone, is plainly a reminiscence of the Syrian buildings considered in Vol. I, pages 290 ff. The new spirit which has come in with the

mediæval freedom from classical ordonnance is seen in the simple banding of two colours, the alternation of the voussoirs, red and white, and the

178—Arches of the great mosque at Baalbek, Syria. (From photo.)

white and dark gray band which breaks the shaft of the tower. This demand for colour, taking even such simple forms as alternation of dark and light, gray and white, is a direct importation from Persia, by way of the Byzantine Empire. It is shown in more elaborate fashion in the buildings of Cairo, described below, and the same taste is manifested in the most unpretending brickwork as in Fig. 180. The simple and well-imagined tower of the Gaza Mosque, square below and octagonal above, is of solid stone to the overhanging balcony, and has its upper story of woodwork and tiles, but this frequently renewed. The simple cupola, springing from an

179—Courtyard of mosque at Gaza, Syria. (From photo.)

octagonal stone drum, is of that light construction which is always in place and familiar in Western Asia.

Fig. 180 shows the little minaret[2] at Kerbela, cylindrical, entirely built of large hard brick, and inlaid with patterns of several colours. The balcony with parapet, provided for the muezzin, or official who calls the hours of prayer, is set upon corbels in an interesting fashion, and the final roof of the building, the lobed and pointed cap, is a most suitable and effective termination of such a shaft and curiously unlike anything known to Europe. This tower is of later date than the mosque at Damascus or that at Gaza, but the same spirit of design in form and in colour decoration prevails in it, except that the influence of Persia is greater than in the older buildings.

180—Mosque of Kerbela, near the Lower Euphrates. (From photo.)

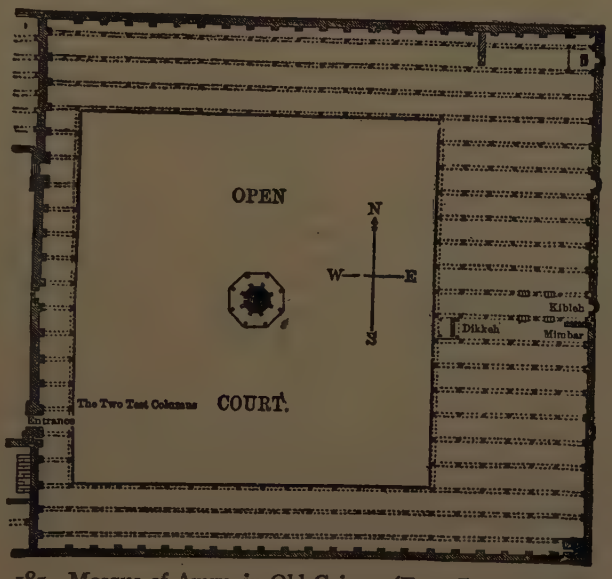
There is little to study in the later Moslem art of Syria; and the more Eastern lands, the banks of the Euphrates and Tigris, with Bagdad, the home of Harún er Rashid, are even more completely stripped of monumental building. There has been no national and little municipal life; and repeated invasion, plunder, and ruin have destroyed what resulted from brief moments of prosperity.

[2] Minaret: The only purpose of towers of this class is to afford a standing place for the mueddin (muezzin) when he has to announce the hour of prayer. The Arabic name is more properly manarah and the Persian name minar, from which the European term is probably derived. None are known of an earlier date than the twelfth century A.D.

CHAPTER III

MOSLEM EGYPT

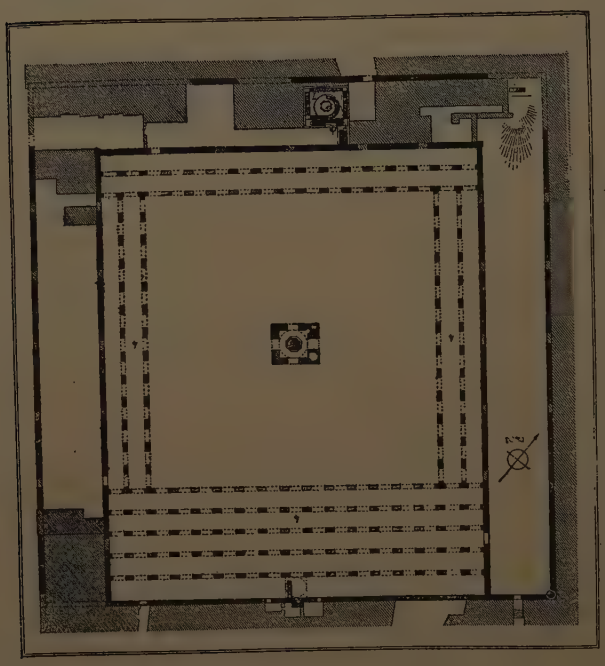
IN 640 A.D. the ancient Roman fortress of Babylon was seized by the Arab invaders under the command of Amr (or Amru) ibn el-As. The legend is that the tent of the conquering general was left in the place it occupied during the siege and became the centre of a city named Fostat, or "The Tent." This Fostat forms now, under the name of Old Cairo, a suburb of the great and brilliant city which was not founded until about 970 A.D. after the more complete conquest of the land of Egypt. This suburb lies close upon the Nile and above (south of) the modern city of Cairo. It is almost wholly abandoned by its former citizens, and the famous mosque which formed its centre and reason for being has almost disappeared.



181—Mosque of Amru, in Old Cairo. (From Lane-Poole.)

Fig. 181 is the plan of that mosque in Old Cairo known as Amr ibn el-As, or, in common parlance, the Mosque of Amru. Nothing remains of the original building except the bases of the columns on the north and south sides, which are otherwise ruined, for on the east and west sides of the court the building has been renewed on many occa-

sions. There is no doubt that the original plan was followed, and that very many of the original columns, and especially their delicate capitals, have been retained. A square court open to the sky, with a fountain of purification in the middle, is surrounded by buildings much more spacious on one side of the court than on the others; that more ample hall forming the chief place of prayer, while the roofed buildings flanking the court on the other three sides were often narrow ambulatories. It will be seen that there was, in the Mosque of Amru, an enclosed building of three aisles at least on each of three sides of the court, with the one-aisled passage on the west side only. It is interesting also to note that, in the largest hall, the rows of columns are to be counted across the principal place of prayer, because the walls which they carry run in that direction, east and west: an unusual system. The niche turned toward Mecca (the mihrab) and the preaching chair, are always on the side which has seemed to be nearest Mecca, but no great pains are taken to fix the points of the compass accurately. The careless rebuilding of this ancient mosque is plainly seen in the uneven spacing and defective alinement of the columns. The arches of the horseshoe form, dating probably from the twelfth century in their first building, and the wooden ties which were used to stay the work in the first place, remain, or have been replaced by others. The arch secured against a destructive thrust by a direct tying of abutment to abutment across the span, is perfectly legitimate building. Our modern contempt for it comes of our experience with the elaborate arcuated systems of the twelfth and following centuries in north-western Europe, in



182—Plan of the mosque of Ibn-Tūlūn, Cairo. (From Joanne.)

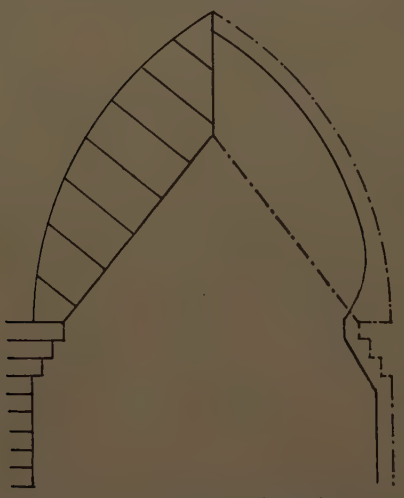
which no ties were needed; but the Italians never rejected the obvious and simple device here shown, as explained in Book IX, Chapter I.

The great mosque of Ibn-Tūlūn at Cairo was built in the ninth century (879 and later) and this is placed with one of its angles toward the north, and the mihrab and mimbar on the south-east side. The plan of this great mosque is given in Fig. 182. In this case all use of Byzantine and classical columns is ignored, and the long rows of arches rest upon solid piers decorated by nook shafts in the corners; their spandrels are pierced with windowlike openings intended merely to give the appearance of lightness to the structure. Fig. 183 shows part of this mosque, taken before recent repairs and alterations. It is the face wall on the south-eastern side of the court, where the width of the covered building is the greatest, and looking directly across the five alley-ways which interpose between the open court and the outer wall. The windows seen in the background are in that outer wall which separates the mosque from neighbouring properties and from the street. All of this work is of the early design except, in some cases, the carved patterns upon the different archivolts and in the horizontal bands above them. This must have been altered at different times, but as the patterns are carved in hard stucco and not cast, the chances are that the original forms have been rather carefully preserved.

183—Mosque of Ibn-Tūlūn (see Fig. 182); south-eastern side of prayer-hall. (From photo.)

This mosque offers one of the earliest instances known of the horseshoe arch, or more accurately, of the arch whose springing line is higher than the abutment, with the curve carried past the springing line and not stopping where it becomes tangent with the line of the jamb. There can be little doubt that the origin of this form is in the construction, for when, as in Fig. 184, the arch is to be built by means of cen-

tring, it is easy to leave a bit of masonry at and below the springing line to support the wooden centre, and so avoid the necessity of long props to support it from the ground. If, now, your arch is of rough brickwork to be coated with stucco, it is easy for the final curve to include that bit of masonry and conceal it. The form once seen was liked; and attention was called to the arches themselves as the main features of the building; the more strongly, the more elaborate the curve of the arch became. The pointed form of the arch is undoubtedly an inheritance from the Copts, or early Christian church builders of Egypt, but the earlier mosque builders were they who added to its form this additional grace of the continued curve, of which some of the earliest examples are those shown in Fig. 183. The same curve is seen in the small openings of the spandrels. In many later buildings the continued curve is very much more pronounced, and the form with only one centre, and therefore without a point at the top of the arch, is still better known and is that which is more commonly spoken of as the horseshoe arch.



184—Probable origin of the horseshoe form of arch. (Drawn by E. P. C., from the author's design.)

It will be noted that this construction affords an obvious explanation of the free use here of the nook shafts. The weight of wall behind takes the pressure and thrust of the arches; and the brickwork projecting from the constructional masonry and made to serve rather for ornament than for utility, is naturally enough supported by the narrow face of the pier, adorned by the rather unnecessary but very beautiful colonnettes of the angles. It is a very satisfactory instance of that addition to the necessary work of construction, which deviation from mere necessity is the truest source of fine architectural detail.

Fig. 185 shows the great court of Ibn-Tūlūn with the fountain of purification in the foreground. That building is thought by Mr. Stanley Lane-Poole[3] to have been built by Ibn-Tūlūn as his own tomb,

[3] The Art of the Saracens in Egypt, London, 1886; Cairo, Sketches of its History, Monuments and Social Life, London, 1893; The Story of Cairo (Mediæval Towns Series), London, 1902.

but converted into a fountain when he had died in a foreign campaign and was buried in Syria. In any case the cupola, built of brickwork and covered with stucco much out of repair, will not enable the student to fix the date accurately, nor is it any help in the study of the mosque. We are looking diagonally across the court, with the easternmost corner in the distance, and beyond this is seen the small minaret of the mosque, and on the left of that the distant domes and slender towers of the modern mosque of Mohammed Ali. The lower wall on the right look-

185—Great court, mosque of Ibn-Tūlūn, looking east (see Fig. 182). (From photo.)

ing like an open screen from the absence of roof, is the wall seen in Fig. 183 in the foreground. The wall on the left, then, is that of the narrow two-aisle passage leading from the great leewan and closing the court on the north-eastern side. It is noticeable how the large arches are filled up with rough modern walling and common windows, probably because this broad passageway is used for various purposes of humble industry. The tall pierced parapet which finishes the wall and shows against the sky is so much worn by the weather that its original character can hardly be made out.

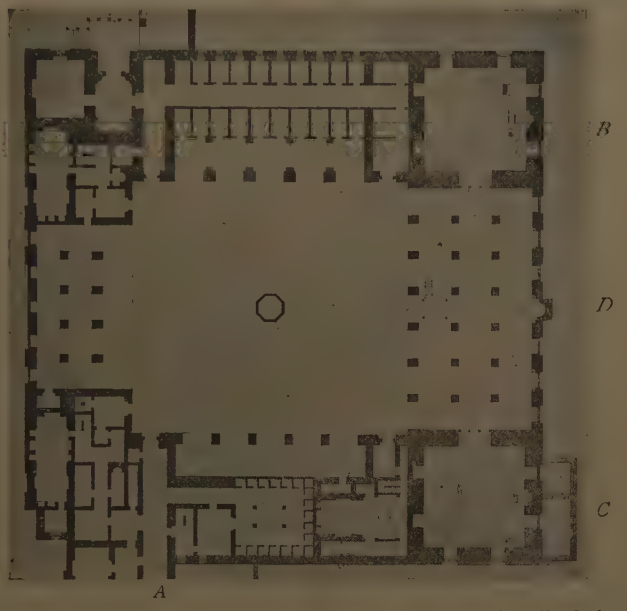
A completely mediæval mosque is one of very small size, given by Prisse d'Avennes, and assigned by him to the twelfth century A.D. This mosque was built in 1160 A.D., by that prince who, on proclaiming himself Sultan of Cairo and its dependencies, took the name of Melek-el-Saleh. The building has now gone to ruin; private residences have

186—Arcade of a ruined twelfth-century mosque at Cairo. (From Prisse d'Avennes.)

been built in the court and even among the columns of the great leewan. Its great court was only 63 feet wide by about 80 feet long, and the chief place of worship had three aisles with six columns in each. A total space of about 90 by 155 feet included all the mosque and its dependencies. It is in this building that we have one of the earliest examples known of the four-centred arch, peculiar in the very slight curvature

of the upper curve on each side, and the unusually great stilting of the arches. Fig. 186 gives a detail of the arcade separating the place of prayer from the court.

Outside the walls of Cairo there are many tombs of great dignity and importance, and as tombs are always places of religious resort in Islam, it follows that the larger tombs, those dedicated to the memory of the greater princes of Egypt under different dynasties, are treated as mosques in every sense of the word. Fig. 187 gives the plan of the tomb-mosque of Sultan Barkūk, thought to have been completed about 1384 A.D. In this very large building a school for theological learning is combined with the place of worship. The large space at the right of the great court, the eastern leewan, is the place of worship. Two smaller mihrabs are seen niched in the same wall. The building is so ruinous that it cannot be wholly explained. Thus, while the small rooms on the north side are evidently intended for students, the large colonnades and the open spaces roofed with domes, on the south and west, are more spacious and also more open to the weather than usual in places of prayer, and their original purpose is not understood. The two square halls which include between them the eastern place of prayer are the tomb of Barkūk himself in the north-east corner, and the building dedicated to ladies of his harem in the south-east corner; these square halls are roofed by the beautifully designed cupolas shown in Fig. 188. The small cupola between these



187—Plan of the tomb-mosque and Medresse of Sultan Barkūk. (From Prisse d'Avennes.)

A. Corridor of entrance. *B*. Tomb-chamber of the Sultan at north-east corner. *C*. Tomb-chamber of the ladies. *D*. Mihrab with cupola.

covers that square of the leewan which immediately adjoins the mihrab; and the niche of the mihrab is enclosed in the square, unadorned projection immediately beneath. The compartments of the leewan, other than the one shown in the elevation, are roofed by very low vaults, so that the external roof of the building is generally flat in accordance with Egyptian custom. The two interesting minarets seen in Fig. 188 rise from the extreme western face of the building; they are indicated on the plan by the small circles with diagonal lines which stand for the low roofs from which they rise. A similar minaret on the south side has been destroyed.

These cupolas of Cairo are not always of solid material, nor is it always easy to ascertain which are of cut stone and which are of the

188—Eastern face of mosque (Fig. 187). (From Prisse d'Avennes.)

hard plaster of the Egyptians laid upon solid brickwork. There are, indeed, some minor cupolas which are built of lath and plaster, but the comparative indifference of the Moslems to the perfect condition of their buildings, has allowed these feeble and imitative structures to betray the inferiority of their building.

The mosque called by the curious name, "Mosque of the Pharaohs," and more properly the Mosque of Sengar-el-Gawaly, has two cupolas close together as shown in Fig. 189. Each of these roofs is a tomb-chamber; and these taken together with the great minaret rising above them, have always occupied as much space as the mosque proper, even including its open court. The view is of the north-eastern side, fronting on the street el-Marasineh. The façade, then, is of that

twelfth-century Renaissance period in Moslem building when the picturesque stepped battlements were added to the earlier stalactite decoration of the corbelled cornice below. This is one of the few instances in which mosques at Cairo can be said to have street fronts. The entrance doorway is on the left, concealed by the poverty-stricken houses of crude brick in the foreground, but accessible by the ramp seen beyond.

189—Mosque of Sengar-el-Gawaly, Cairo. (From photo.)

The admirable tomb-mosque of Kait-Bey, one of the most famous among the buildings of Cairo and its neighbourhood, has the beautifully carved dome shown in Fig. 190. Prisse d'Avennes in the first volume of his folio work[4] gives a number of these cupolas arranged in contrast, one with another, in addition to those shown in plates of complete buildings. No one of them is richer or in better taste than the one taken from the tomb of

[4] L'Art Arabe d'après les Monuments du Kaire depuis le VII^e siècle jusqu'à la fin du XVIII^e, par Prisse d'Avennes. Paris, 1877. 3 vols.

190—Tomb mosque of Kait-Bey outside the walls of Cairo. (From photo.)

191—On the left, minaret of mosque of Sultan Kalaūn; about 195 feet high. On the right, that of mosque El Bordei. Both in Cairo. (From Dictionary A. and B.)

Kait-Bey. This building dates from 1460. It has a very striking minaret; but this is apparently of a later date and of a time of less pure taste. The excessive projection of the sculptured interlacings and the evident desire to get sharp contrasts of light and shade show poorly beside the calculated delicacy of the relief sculpture upon the cupola, the spandrels of the arches, and the panels which display Arabic texts.

192—Minaret and cupola of mosque of Sultan Beybars, Cairo. (From photo.)

It is probable that the more massive minarets will be most approved by the European student. The minaret which adjoins the mosque of Ibn Kalaūn is one of the most effective, and is shown in Fig. 191. The small and ruinous mosque named after Sultan Beybars (see Fig. 192) is of pleasant outline and is one of the best examples of the so-called stalactite decoration (see the analysis below). The famous mosque of El-Hakem (Fig. 193) has the extraordinary minaret rising from a more ancient square tower. The original scheme of this tower and the general design of the mosque are uncertain on account of its almost complete ruin.

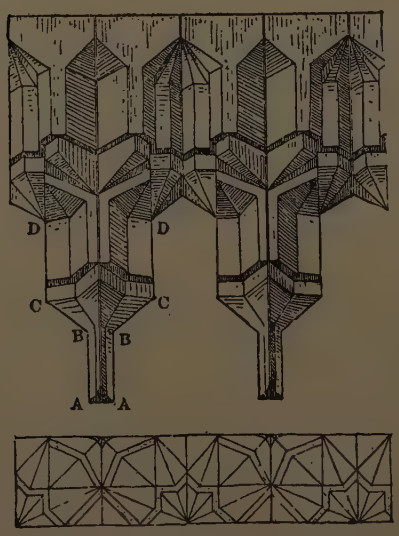
In the eastern part of the city—the quarter farthest from the river and the open town known to travellers—the mosque of Sultan Beybars, the tomb-mosque of Barkūk, the very large mosque El-Azhar, identified with the modern university, the mosque El-Ghuri with its double mausoleum, and not less than six other mosques, palaces and schools,

are found close together. Of all these by much the most important in size and in pretension is the Gam'-el Ezhar, "the splendid mosque." It is largely a university and in the course of centuries it has been so much modified that it has lost all purely Oriental character and is no longer an architectural study of importance.

One of the monuments of this quarter is the hospital-mosque of Kalaūn, and no one of the public buildings in this quarter is more hopelessly confused with the crowd of smaller buildings which encloses and hides it from view. It has been in use by the English army of occupation, and has lost its interior effect as originally intended; but its admirable minaret and a certain large treatment of its mass are in no way marred by the abundance of minute detail in carved stone and carved stuc-

193—Minaret built upon ruined ancient tower, mosque of El-Hakem, Cairo. (From photo.)

co. The minaret, as given in Fig. 191, may be thought the most beautiful of all those in the Moslem East; and it explains the system of the much-admired bracketing known generally as the stalactite ornament. It is noticeable that in this case the lower course or system of bracketing is employed to pass from the square to the circle and to carry the round terrace roof in bold projection from the walls below. In the upper band the scheme seems to have been to pass from an octagon to a circle, but the building is so injured that it remains uncertain whether a sixteen-sided polygon was not intended. In either case the system of bracketing is the same. In the minaret of the mosque of Sultan Beybars (Fig. 192) the same system is used in passing from a square tower to an octagonal terrace. In the mosque of Kerabeck or Kerbekeh the minaret has four systems of stalactites; one in which small balconies are carried in projection from four of the eight faces of the octagon; one in which the circular balcony is corbelled out from an octagon; one in which another circular balcony is corbelled out from a circular tower; and the fourth a mere cornice-like fitting around the roof of the culminating pavilion.

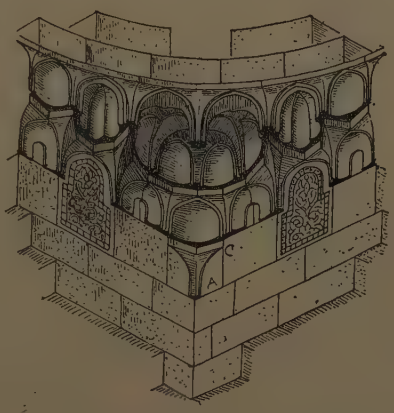


194—Mediæval Egyptian bracketing. (From Gayet.)

This construction is far from being an intelligent one when considered from the point of view of economy or durability. It is a mere ornament and depends for its existence upon the extraordinary tenacity of well-chosen cement and its perfect adaptation to building with brick, and coating the surface of the rough masonry. It is, indeed, a kind of cast of strong plaster based upon a brick substructure. Let Fig. 194 be a plan and elevation of a very simple piece of this bracketing. At the points *AA* the projecting prisms of brickwork leave the face of the wall. At *BB* a corbelling-out begins, which stops at *CC*, and this corbelling may be built of brick with the beds in any direction, though the ordinary horizontal bed is preferred. A set of prisms rises from *CC* and goes on unbroken as far as *DD*, where another corbelling-out

begins, and so on to the end. It is evident that a vast number of combinations is possible and that nothing could be more amusing to the designer debarred the use of figure sculpture and even, in most cases, of floral sculpture as well, than this succession of ingenious combinations of very simple forms. Any one who has designed complicated patterns in mosaic and other flat decoration will understand this, but the opportunity of doing the same thing in relief has a still greater charm.

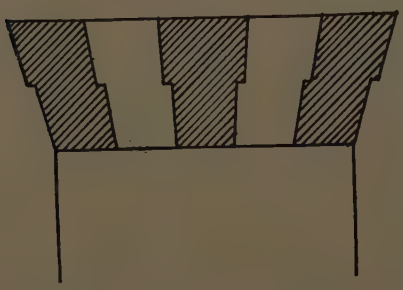
The most common use of the stalactite ornament is, however, the very reverse of that shown in Figs. 191 and 192. This is its use in the interior, as a method of passing from the square shape of the hall to the circle of the dome. It cannot be said to replace the pendentive; rather it is a pendentive of brickwork, very simple in principle, concealed and made ornamental by thick coatings of plaster. A very simple instance of this is given in Fig. 195, taken from a small tomb-mosque in Cairo, called by French writers the tomb of Karafah. In this the same system is followed and in the cut the same letters are used to refer to the different parts. It will be noticed that in Fig. 195 as distinguished from Fig. 194, the growth of the corbels is by curves without sharp re-entrant angles. The construction is the same; it is only the surface of the plastering which is varied.



195—Stalactite ornament from tomb of Karafah (see Fig. 194). (From Gayet.)

There is another and far more workmanlike decorative appliance much used by the Moslem architects, especially in Egypt. This consists in an elaboration of the joints and beds of cut stone in the facing of the walls. Beginning with the simple form—that shown in Fig. 196, and common to the mediæval art of many countries—it proceeds to forms as complex as those of the tomb-mosque of Kait-Bey, shown in Fig. 190. It is undoubtedly true that in many instances the real construction is disguised by recent daubing with dark and light color, and equally true that it is very hard, either in the presence of the monuments or from the most perfect photographs, to separate the genuine from the pretended inlay of solid blocks. The patterns in external masonry

are more often the result of actual stone-cutting. Fig. 197 gives an instance of a somewhat elaborate design, but it will be noted that in this last case a lintel is built up by fitting the stones together and that the resistance of the lintel depends upon this very keying of the parts, which is not true of the patterns in Kait-Bey's mausoleum, where the parts are voussoirs of an arch, apart from the elaborate cutting of their joints. The photograph (Fig. 198) shows a very elaborate example in the Cairene mosque of Muaiyad. It is impracticable to guarantee the constructional nature of all parts of this elaborate design. The arch seen on the extreme right is almost certainly a genuine piece of cutting and fitting of the voussoirs; but how far back from the archivolt the joints are cut in this complex fashion cannot be ascertained. On the extreme left, the innermost archivolt and the semi-dome beneath it are probably built in this way, with the actual cutting of the marble carried out in all its parts according to the design. On the other hand, one suspects very gravely the marking of the voussoirs in the arch immediately above it—those broad black stripes in the intrados which run back horizontally and repeat themselves on the archivolt of the enclosing arch. It is probable, indeed, that the whole of that square head above the arched niche is in part, at least, a deception. The inlays of the niche itself being on a line with the eye and easy of observation, are undoubtedly genuine. At the same time as there is no constructional necessity, it may be thought that there is no pretence of their being more than a marble veneer in this case. It shows merely that the fifteenth century workmen had become accustomed to very elaborate curved surfaces and the careful fitting together of pieces of marble more or less mas-



196—Use of particolored materials in stone walling; a flat arch. (Drawn by E. P. C.)

197—A Cairene lintel built of keyed stones mutually supporting one another; a modification of the arch. (Drawn by E. P. C.)

198—Interior of mosque of Muaiyad, Cairo. (From photo.)

sive. Before leaving this picture (Fig. 198) it may be well to note the use of the stalactite ornament in carrying a capital from the round of the shaft to the square of the abacus. This is not a fortunate conception. In the same picture the dado at the bottom of the niche may be noted as a good piece of what is obviously a mere mosaic of thin marble veneers. The veining in these panels is plainly visible. Moreover a very similar dado occurs in the mosque of El-Burdeni and others, with less elaborate shaping of the panels, but

199—Inlays from mosque of El-Burdeni, Cairo. (From Prisse d'Avennes.)

otherwise of the same character. In that mosque, El-Burdeni, and in the mosque of Sultan Khansu El-Ghuri the dado is very commonly made up of just such vertical panels: and in some of these there is found an inlay of stucco in the marble slabs.

This decoration of the surface by inlays was carried very far in the seventeenth century, under the Turkish domination. At that time plates of metal, damascened or otherwise adorned with other metallic colours, were used in connection with marble slabs, and an inlay of coloured marbles on white marble in all respects like Florentine mosaic, was freely used. The interlacings of white and coloured bands, so often cited as characteristic of Moslem decoration, are not very ancient, but from the fourteenth century on they are found; and they were per-

haps most in favour in the seventeenth century. Fig. 199 gives an example taken from that same mosque, El-Burdeni. Similar inlays were used for marble pavements, and the designs in these cases are even more interesting because they are less apt to be exaggerated in their complexity. They may be compared with the pavements of the greater Christian basilicas of the sixth and seventh centuries. Again the surface of cut stone was sometimes engraved with elaborate patterns of straight lines and simple curves, and these intaglios were filled with stucco of some kind. This material could be used for pavements not much exposed to wear; and it was an obvious expedient for the decoration of walls. On the whole, the most interesting colour patterns are the earlier ones, those of the thirteenth and fourteenth centuries, as shown in Fig. 200. The later patterns, those of great elaboration, and especially those with interlacings, draw their inspiration undoubtedly from the Persian earthernware tiles, which were common in Egypt after the thirteenth century and probably were imitated there.

200—Egyptian thirteenth-century tiling. (From Prisse d'Avennes.)

These tiles are of two general characters: those whose patterns are entirely based on straight lines, in which category come the interlacings; and those which are built up upon a naturalistic scheme with elaborate floral and foliate compositions. The Persian Moslems have never been as strict as those of other lands, and their decoration comes very near to a close copying of simple natural forms. There seems to have been no hesitation in Egypt in using these floral tiles, and buildings of the fifteenth century and later are found decorated with them in borders, panels, door-heads and the like. One of the most elaborate is a large surface of wall covered with a simple floral pattern, and having in the

middle a single panel of faïence made up of twelve square tiles painted in one design of the character of a landscape and evidently representing the Kabah or sacred mosque at Mecca, with small buildings around it and a suggestion of mountains in the distance. This, of course, is an exceptional piece of realism, and it cannot be said positively that this piece is of early date.

201—Window from mosque of El-Akrafieh, Cairo. (From Prisse d'Avennes.)

The same love of simple mosaic patterns, plain colours prettily contrasted, is found in the windows filled with stained glass. A characteristic window of the later mosques is one in which a slab of marble or plaster is pierced with holes of various shapes, forming a carefully planned pattern; these holes being then filled with pieces of glass of different hues and tints. It is an extremely simple method of procuring a transparent mosaic, but it is beautiful in general effect. In a few cases the pattern is so elaborate as to include some suggestion of free nature: a cypress tree filling a panel,

with the vegetation around it cleverly indicated; an anthemion with wide-open flowers, buds and leaves, and the like. The more general theme is much more simple, with interlacings and scrolls, seldom going beyond the grouping of leaf forms in a species of fleur-de-lis. Fig. 201 is a window published by Prisse d'Avennes from a drawing made by him in Cairo, which window, he tells us, had disappeared in restorations made before the final completion of his book, about 1875. It is always difficult to fix the date of such an easily injured, often removed and often replaced detail as a small window of this class. Such little protection as enlightened opinion affords to the glass in European cathedrals is lacking in Cairo. The opinion as to its epoch of the artist to whom we owe this drawing is confirmed by the excellent authority of Gayet and is not contradicted by others. It is that designs of this kind date from the fourteenth century A.D. Windows of somewhat less elaboration are found in older mosques, such as that of Kait-Bey, in the city of Cairo, but the character of design in both the simpler and the more elaborate specimens has been preserved in the slowly changing East, and modern houses have windows which are only less rich and not much smaller.

Street fountain at Jerusalem, Syria. (From photo.)

CHAPTER IV

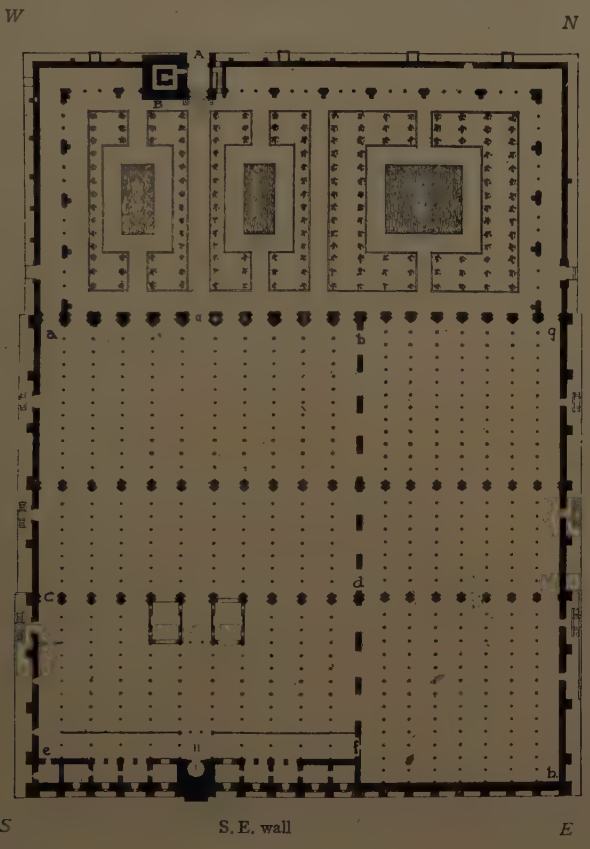
SPAIN AND NORTH AFRICA

THE Arab conquest of the northern coast of Africa began in 640 A.D. with the invasion of Egypt, and by the year 700 the whole region was subdued, 2,200 miles long from east to west. What we now call the Barbary States, i. e., the land of the Berbers. Tripoli, Tunisia, Algeria and Morocco, were reduced to submis-

202—Great mosque of Kairouan, prayer-hall to left; to right, great court and Muezzin's tower. (From photo.)

sion between 675 and 698. Kairouan in Tunisia, founded in the former year, was the military capital of the invaders.

While this occupation was still incomplete, came the occasion to interfere in the affairs of the Spanish peninsula. The newly converted inhabitants of the African provinces, glad to be freed from Vandal oppression and the distant and unloved rule of the Roman court at Constantinople, made up the strength of the Moslem armies. The



203—Restored plan of the Mosque of Cordova, begun by Abd-er-Rahman, soon after 785 A.D. See *a*, *b*, *c*, *d*, in the plan. *A*, principal entrance; *B*, great tower. *I*, the new or third mihrab. The northwest part is an open garden, the "Court of Oranges." The mosque has been greatly altered during the four centuries of its existence as a Christian cathedral. (From Junghaendel's survey).

Visigothic kingdom was destroyed at once, by the victory at Jerez in 711. Within ten years thereafter, all the peninsula was under Moslem control except the northernmost mountain region, from Corunna eastward to Navarre and Barcelona. This was the last western triumph of Islam, for the conquests north of the Pyrenees were temporary, and a final check was put to Arab conquest by the battle of Tours in 731.

Middle and southern Spain became the centre of a new Kalifate, seated at Cordova, and dividing with the older power of the Abasside Kalifs, at Bagdad, the control of the Mohammedan world. This was achieved in 755 A.D.; and the western vicar of Mohammed began, in 786, the building of a mosque destined to be the most important in Islam. We are not to suppose this building or its administration an out-of-the-way, provincial establishment; it was a deliberate attempt to fix the centre of Islam in the west, and to outvie the glories of the city on the Tigris.

There is at Kairouan a mosque which dates from the first Moslem conquest in the last years of the seventh century. Fig. 202 shows the

204—Interior of mosque of Cordova. (From photo.)

interior of the chief place of prayer; interesting because of the unusual width between the supports spanned by wide and high arches resting upon short columns; and, as arches are sprung in four directions from each capital, the result is the dividing of the flat roof into squares. These square compartments are filled with flat beam-ceilings, painted and gilded in patterns. Just above the mihrab is a stone cupola carried on four arches, with pendentives; and these columns are of great beauty. The shafts of the columns generally are of white marble.

Fig. 202 shows that one of the aisles which adjoins the great court, with the muezzin's tower in the distance, and a part of the covered ambulatory which encloses the court on three sides. It is not possible,

however, to assume that all these arcades are of the original mosque. The tower is probably of the twelfth century.

The great mosque at Cordova was so planned that its south-eastern wall should hold the mihrab. This system has been maintained

205—Approach to the mihrab, mosque of Cordova. (From photo by M. J.)

through all changes. In Fig. 203 the plan shows the two halls, lettered *a*, *b*, *c*, *d*, as that part of the mosque built under Abd-er-Rahman I and his successor; *c*, *d*, *e*, *f*, the hall added by Al Hakem II in the tenth century. Soon after, at the beginning of the eleventh century the easterly part, *b*, *f*, *h*, *g*, was built. The great tower is not of Moslem work;

this, with the interpolated Christian cathedral church, in the very heart of the great prayer-hall of the mosque, are of the neo-classic decadence, not completed until about 1610.

There were, then, in 1010 A.D., 510 separate columns, not including the walls and piers of the perimeter: and these carried a continuous roof over a space about 330 by 409 feet, measured within the walls. The original roof is now replaced by vaulting of no architectural importance. The outer wall upon the street is flat, except as square buttress-like piers project three feet or more, keeping their dimensions to the top. Then this wall is crested with small battlements of picturesque zig-zag outline. Otherwise there is no general system of design; but there are some fine doorways, and four or five of the bays, enclosed between the buttresses, have each its little façade, different from all the others. This monotonous exterior encloses the roofed building of the mosque and the orange-tree court alike, and this high masonry wall topped with battlements corresponds with the flat roof; so that to the student of architectural evolution the interior alone is of importance. Fig. 204 gives a general view of the hall of prayer looking north-eastward toward the wall which separates the roofed building from the courts, and showing in the distance, between the columns, a Christian chapel

206—Detail of the Mihrab, mosque of Cordova. (From photo by M. J.)

and altar, one of many which line that wall. It will be seen that the shafts of the columns are of very richly veined marble and that the capitals are generally rudely cut imitations of Corinthian work, as if the artist had stopped his labor after blocking out the mass. It is impossible to fix the epoch of these clumsy attempts. Each column carries, then, a high and massive pier which supports the roof and carries free arches springing in two directions. These arches can only be thought to serve the purpose of horizontal stays. They are put in because a twelve-foot shaft had to carry twenty feet, more or less, of vertical pier directly superimposed upon it. It was necessary to prevent sideway movement, and this device was employed, rather than another, with the thought of adding to the generally picturesque effect. The artistic thought once accepted, of giving emphasis and character to the long-drawn aisles of the comparatively low building, these arches could not fail to meet the wishes of the designer. A still more elaborate system is followed in certain parts of the interior. Fig. 205 is a view looking south-westward, along one of the great alleys, with the mihrab (*I* on the plan) visible in the far distance. Modern railings nearly conceal the details of the mihrab, but the niche shown in the detailed view (Fig. 206) will be recognized beneath the cusped arch at the end of the vista. The nearer arcade shows the curious way in which the arches, while still doing their work of stiffening the slender uprights, produce a fantastical and bewildering scheme

207—Cupola of the Mihrab, mosque of Cordova. (From photo.)

of decoration. Not only are the arches elaborately cusped and adorned with sculptured detail, partly in stone, partly in hard stucco, which is all arranged on the system of emphasizing the archivolt and its division into separate voussoirs, but those arches are cut and built as if interlacing, their archivolts crossing one another at various complex angles.

208—Interior of church called El Cristo de la Luz, Toledo. (From photo.)

Fig. 207 is the cupola of the mihrab seen from the floor below and looking vertically upward, the chain hanging from the centre of the cupola showing the true vertical line and fixing the centre of the structure. The light from four windows in this cupola falls upon the floor of the mosque immediately in front of the niche of the mihrab (Fig. 206). The ribs by means of which this cupola is built are worthy of special notice, because of their close connection with the use of the rib vault in that European architecture, which we call Gothic, beginning only a few years later. It is evident, indeed, that if the Moslem builders had used the ordinary groined vault more freely, the vault made up of interpenetrating tunnel vaults, it would have occurred to them to have used ribs where groins resulted from the meeting of the curved surface, and the Gothic building would have been invented in southern Spain instead of northern France.

There are few remains of Moorish architecture left in the Peninsula in any condition which allows them to be the subjects of study. The churches which were once mosques have been so completely remodelled that little of the original character is left. The building at Toledo, once a mosque, is now the chapel of El Cristo de la Luz. The exterior is curiously interesting because of the mingling in its detail of northern Romanesque with Moslem feeling. The brickwork has been repointed and even more thoroughly repaired at different times, and the choir is of the Christian epoch (see Chapter VII). The interior is undoubtedly older; it is perhaps of the eleventh century. Its general character is partly shown by Fig. 208; but the very small scale of the building is hardly observable in the picture: the church is only 21 feet wide. The curious Visigothic capitals, unfortunately much defaced, are used to carry horseshoe arches of a much later period. These arches, which spring from column to column in each direction, divide the roof into squares, as in the mosque at Kairouan. These squares, however, are not, in the Spanish church, roofed with flat wooden ceilings, but are carried up into cupolas which have been built in different designs, many of them extremely quaint and unusual, as if the builder had been trying experiments in various unexampled ways of closing in a small compartment. They are not attractive, nor has their example been followed in any style known to us; but as examples of ingenious combinations of straight lines and curves, they are worthy of a moment's notice, as published in the great work on the antiquities of Spain.[5]

209—Tower of Mansourah near Tlemcen. (From photo.)

At Tlemcen in Morocco, the great mosque, although probably of

[5] Monumentos Arquitectonicos de España.

the twelfth century A.D., contains much of the early spirit of Moslem building. It is planned upon a system like that of the famous early mosque of Ibn-Tūlūn (see Fig. 182), a system naturally adopted whenever the supply of easily wrought marble or, still better, of ancient columns, already made, should fail. Here, as in the Cairene mosque, the roof is divided into long, narrow compartments resting upon the arcade, and no attempt has been made, except in the outer passage shown in the photograph, to divide the whole space into equal squares. In short, this mosque, though renovated at different times, has preserved its character as an early monument of the Moslem conquest.

210—Minaret of mosque of Sidi-bu-Medina, Tlemcen. (From photo.)

A splendid minaret in the near neighbourhood is so much ruined that only the main body of the tower can be understood. It is worthy of study on account of its simple dignity, as shown in Fig. 209. The flat relief around the doorway would be thought a noble design if it were, as it seems to be, carried out in brick. It is, however, in cut stone, with some of the parts supplied

in hard stucco; and when a flat pattern of this kind is carved deliberately with the chisel, the student is obliged to regret the absence of a more carefully considered system of relief. Flat patterns should be confined, perhaps, to those materials which admit of flat patterns only, and can hardly be sculptured into rounded form.

This flat relief, as of a sawed-out plank secured to a flat surface, is apt to be repellent to the European student of Moslem decoration, because the sculpture of far less costly buildings of the West is so often

211—Plan of the Alhambra. (Drawn by E. P. C. from different authorities.)

in complete relief, the parts subordinated one to another as if in representation of natural forms. It takes time, a deliberate change in the point of view, to accept the hard uniformity and sharp-edged shadows of Moslem patterns at their full value. Another minaret is attached to the mosque of Sidi-bu-Medina, and this, as given in Fig. 210, shows us an early example of that brickwork used in flat decoration which we associate with the later Moslem art as especially seen in the Giralda at Seville. The culmination of such decorative work in flat brick and mortar masonry is seen in that famous tower named in the last sentence. It is often reproduced, and has been copied in recent buildings; but all the belfry and spire are of the late Spanish decadence, and the

212—Puerta del Vino, in the outer walls of the Alhambra (see Fig. 211). (From photo.)

student will understand that nothing in the tower is Moorish, above the first projecting horizontal course.

The Spanish Moslem military and political power was short-lived. The religious frenzy of the first conquest passed, there were few Asiatic

213—A pavilion on Court of the Lions (see Fig. 211). (From photo.)

and few Moorish soldiers of Islam in Spain, or free to cross the narrow seas from Africa. The Christian kingdoms and dukedoms were re-established, Castille, Leon, Aragon, Navarre; Galicia in the north-west, Catalonia in the north-east, and then Toledo, Valencia, Seville, and even Cordova. The pure art of the western Moslems was even

more speedily extinguished, for it passed into the Mudejar[6] style in the states recovered by Christian rulers, and in Granada it passed through a rapid decadence until in the thirteenth century such adornment as that of the Alhambra was what it had to offer. The Alcazars of Seville, Segovia, and Toledo have been either wholly replaced by European buildings, or redecorated by Moors working for Christian princes: the Alhambra alone keeps for us something of the late Moslem style as it was known in the West.

Fig. 211 is a plan of the ancient palace of the Alhambra, which consists of a series of courts upon which open halls and chambers in

214—South end, Court of the Myrtles (see Fig. 211). (From photo.)

one story only, for the most part: the whole arranged within fortress walls upon a steep hill. The defensive works are not very strong; but the exterior is as completely given over to mere enclosure of the space within, and the occupying of all points of vantage on the hill-top, as if it were a formidable citadel. The most interesting thing in these outer walls is the Puerta del Vino, which is not included in the plan (Fig. 211),

[6] Mudejar architecture: A name given in Spain and North Africa to any style in which Moslem details are used to modify a late Gothic or Renaissance system of design.

but lies westward, beyond the unfinished neo-classic palace of Charles V. This gateway is shown in Fig. 212: it is a most fascinating piece of pure early work, in which the peculiar arch-form generally identified with bricks and mortar covered with plaster has been carried out in cut stone, the joints all arranged to radiate from one centre. Painted tiles are set in an outer archivolt to cover the spandrels: then follows a broad band of cut stone, designed as if a flat discharging arch to take the load from the doorway-arch below, but probably an arch in appearance only. Above this, the wall is cased with hard plaster, the patterns cast and wrought.

215—Doorway of former mosque at Zaragoza. (From photo.)

Little of the palace is as interesting as that gateway. Plaster upon light wooden framework forms the greater part of the interior decorative walling and the arcades, and all this has been much restored, renewed, kept in perfect order and high finish for at least the last quarter-century, so that all the grace of time and wear are denied its unintelligent patternwork. Fig. 213 is the north-western end of the Court of the Lions. The columns are about 9 feet high including the square abaci: the whole height to the eaves is about 22 feet: the little pavilion with its fourteen columns is, then, about 16 feet square. Fig. 214 is the north-eastern end of the large court, called Court of the

Myrtles (Patio de los Arrayanes): and the arcade of seven arches measures 76 feet in length.

A few fragments of rich Moslem work are left scattered over Spain. At Zaragoza there are some fragments of an ancient mosque, one attached to the royal palace of the Aljaferia, and the elaborate adornment of the later Moslem work is seen in the well-preserved doorway shown in Fig. 215. In Chapter VII of this Book there are considered traits of Moslem design after the Christian reconquest.

Street fountain: Place Halfaouin, Tunis, North Africa. (From photo.)

CHAPTER V

MOSLEM PERSIA

IN 642 A.D. the Sassanian dynasty (see Book VI, Chap. IV) was finally overthrown by the Moslem conquerors, and the whole country between the Caspian Sea and the Persian Gulf was soon brought under the rule of the Caliphs. That region has been the central part of the Persian power at all epochs, and the Arab conquest here was never as complete as in Egypt or Syria, Africa or Southern Spain. The Persians had a traditional feeling of nationality, religious unity, a strong sense of pride of race, and esteemed themselves rightly as the heirs of a great civilization. They were not patient subjects; Arabic never became their language for business, government, or worship: most important of all, they followed up their own artistic evolution. The cupola was their own; it had originated in the uplands of Central Asia, resulting in a form as different from the Roman cylindrical vault as the Eastern from the Western spirit in politics. The Byzantine builders had based their style upon the Eastern and the Western traditions, combined, but when, in Persia, a Semitic religion and social order seized the supremacy over those of Iran, the Asiatic art traditions alone were to be considered. The peoples of the newly made provinces of Islam, whether Persians in the strict sense or as designated by the titles which we interpret as Kurd, Tartar, Korasmian, or the like, were all possessors of that admirable method of building which has been described in connection with the Sassanian dynasty.

In Persia the mosque was not understood as it was by the builders of Syria and the builders of Egypt at the same time. In those more western lands the Arab conquerors found no indigenous art strongly rooted in the affections, and still more in the habits of the people. Byzantine architecture had prevailed with the church builders

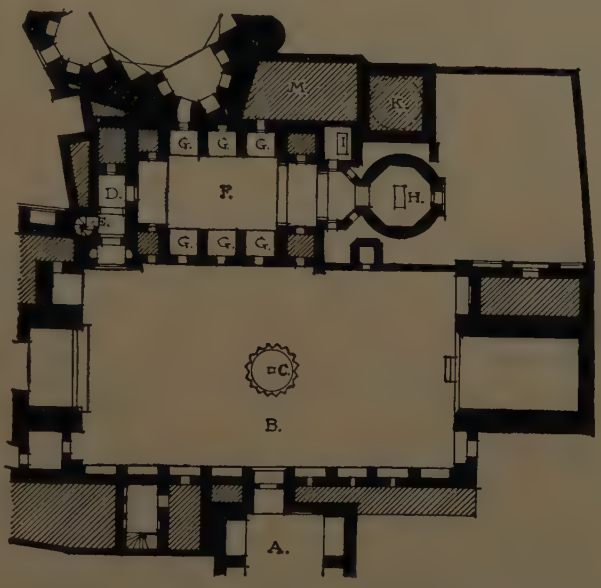
of those regions, but this influence had been of so little absolute authority in Egypt that the Coptic churches never adopted the essential Byzantine plan, that with the central dome and the radiating disposition; and in Syria the churches with nave and aisles—the stone-built basilicas—were as important as were the domical churches, and probably as numerous. Such a study of the church-building art as this was not calculated to overawe the conquerors, and they followed their first instinct, as simple people of the desert, building large, uniform, flat-roofed enclosures without distinction of plan. In Persia, however, it was impossible not to conform to the traditional building laws of the native races. The Persian mosque had of necessity the great court open to pedestrians only, and therefore a convenient place for prayer and for conversation; and also the especial place of prayer, larger or smaller, but always a continuous and undivided hall, in its nature another court, but roofed. These roofs consisted, very often, of shallow cupolas surrounded by the flat covering of their pendentives or three-cornered trompes; but this hardly affected the external aspect of the structure. So far they were nearly at one with the people of the lands west and south-west of them, but in Persia the people were skilled brick-builders, they knew how to build many kinds of vaults cheaply, without centring; above all, they were bold innovators, as quick to modify old forms as they were resolute to preserve old methods.

The earliest Persian mosques have not been identified. The numerous European students of Persian art, captivated by the splendour of its variety of decorative design, admiring its system of surface adornment in colour by means of enamelled tiles of earthenware (which excels that of all other peoples and all other epochs), more or less alive to the skill of the builders and the dexterity of those who follow the builders and invest the rough masses with solid and enduring surface adornment, have forgotten too generally the necessity of studying the plan and the essential structure of the buildings. The interval which elapsed between the seventh and the tenth century A.D. cannot be filled by us as yet with an adequate series of mosque plans showing at all their development. We have to take a plan of the tenth century with its subsequent alterations, and to compare with that a plan of the fourteenth century, reasoning backward thence to the plans of the earliest times.

It is fortunate that the epochs of architectural design can be rather closely estimated, in Persia. The evolution of Persian design is nearly

as evident to us as that of Europe itself. The nature of the building, however, admits so readily of alteration in the surface adornment and even in the superstructure generally, and the Persians have so well maintained their powers as artists, that even structures of the eighteenth century harmonise with those of much earlier date. In this way the examination of date and origin is again made more difficult.

There is no better mosque to study than that at Ardebil (Ardabil), a fortified town south-west of the Caspian Sea, in that far northern province of the Persian Empire, the capital city of which is Tabriz. In these remote towns there is much less destructive rebuilding in the taste of the present dynasty of Persian monarchs. This plan is, indeed, unusual in being of a building large and stately in proportion to the amount of accommodation for worshippers. A mosque in a larger city would naturally have the leewan for worshippers much more spacious than the one shown in Fig. 216. This, indeed, is but a small room, the clear space between the tribunes having only twenty feet of width by about thirty feet of length, a space which is doubled, perhaps, by the seven square tribunes themselves and their curious eastern apse, which is the only trace in the plan of any association with Occidental church building. It is noticeable, too, that the entrance to this hall for worshippers is extremely indirect. They must enter by a narrow passage with two still narrower doorways to pass through, and forming a sharp right angle, and that passageway is also the only



216—Plan of mosque at Ardebil. (Drawn by E. P. C., after Sarre.)

A. Entrance to court. *B*. Great court. *C*. Tank for ceremonial washing. *D*. Entrance to leewan. *E*. Stairs to galleries. *F*. Principal leewan, or place of prayer. *G*. Niches or retired places of prayer. *H*. Tomb of Sheik Safi. *I*. Tomb of Sheik Ismaïl. The shaded parts are rooms not visited.

means of exit. There are other leewans beside the central hall of the great prayer room, and these open directly from the court, and the court itself is about fifty feet wide and about ninety-five feet long. If these dimensions are compared with those of the great mosques at Damascus, Cairo, and Cordova, it is seen that the building as a place of worship is but diminutive.

Its chief purpose, then, is to serve as the religious accompaniment of several tombs; that of Sheik[7] Safi, to whom is dedicated the round, towerlike addition to the apse at its eastern end, Sheik Ismaïl, a successor, to whom a smaller square chamber is dedicated, and several graves of persons of less celebrity. Moreover the great building at the north-west corner, with an octagonal exterior and a cruciform interior, was undoubtedly built as a memorial, although the traces of its first dedication seem to be lost. It is used now as a mere store-house, and is rather celebrated among Persian travellers as containing a marvellous gathering of fine pottery and porcelain vases and platters of splendid design.

Fig. 217 shows the north wall of the court from the western corner, along the whole length of the leewan and its appendages, the high, narrow archway on the left marking the porch of entrance to the leewan. The five square windows in the upper story are not those seen on the plan, but are those opening upon the tribune and serving as clear-story lights to admit daylight to the central hall. The windows shown in the plan are those just visible in the lower part of the wall. The porch of entrance is deeply recessed, with niches on the left and right of the passageway and covered throughout, above and below, with the most exquisite decoration of painted tiles. Similar tile decoration covers the flat spaces between the upper and the lower windows of the leewan, and surrounds and encloses the windows of the upper row. A band of similar tile about five feet wide runs along the top of that flat wall and below the bracketing of the cornice; and this band is charged with two different Arabic inscriptions, one in white or pale yellow enamel on a darker ground, and the other in darker colours and made up of smaller letters, overlaying the first in a very curious fashion. It seems that these two inscriptions were intended from the first inception of the frieze as a decorative feature. It is a valuable

[7] Sheik: the term when used before a proper name signifies generally a doctor of the Moslem law; sometimes a person of revered sanctity, especially when applied to a man long dead.

study for Western students of design, this treatment of a wall as a feature which must be kept flat at any cost because facing upon a not large court, and whose decoration must be, therefore, in colour, and refined in detail. The free use of blue in these tiles is startling to the architectural designer, though familiar enough to the student of Persian faïence. Its presence in such abundance is not necessarily a proof that it is preferred in chromatic decoration; it is fully as much the

217—Ardebil, north wall of court (see Fig. 216). (From photo by F. S.)

result of the exceptional success achieved by the potters in the production of brilliant enamel of that hue. The use of such tiles in the exterior and interior decoration of the building has given its popular name to the wonderful Blue Mosque of Tabriz.

Fig. 218 shows the westernmost part of the south side of the great court, including four of the nine shallow niches.

The scheme of a purely decorative building in Persia, such as a stately mausoleum, is often a nearly cylindrical hall roofed by a cupola and approached by a short passageway, to which passage a lofty and magnificent porch, huge in proportion to the main structure, gives

access. The cylindrical tomb attached to the apse at Ardebil (Fig. 216) is an instance; but there the porch is replaced by the apse itself. At Bostan, south-east of the Caspian, there is such a tomb, complete with its gateway, the cylinder about 60 feet in diameter, deeply fluted, or built with sharp vertical ridges. Among the ruins of Rei, the ancient city which has been replaced by Teheran, is a brick tomb-tower built in this way with deep clefts, leaving twenty-two sharp ridges; as well as a stone tower with smooth, cylindrical wall; these being both of the early Tartar school, and now ruinous. At Kum, at Samarkand, at Meshad, the system of building with alternate ridges and recesses is found among the older buildings, and the modern mosques of Ispahan show it freely. This, however, is

218—Ardebil, south wall of court (see Fig. 216.) (From photo by F. S.)

a mere variant of the cylindrical hall, roofed with a lofty cupola; which is the type always kept in view. The very palaces of the third and fourth centuries, those at Firouzabad and Ctesiphon, would be of that simple plan if they could; but circular halls will not combine well with other halls, and with rooms and passages, and therefore the circular roof was required to adjust itself to a square apartment.

Fig. 219 is the court of the great school-mosque, the Medresse Shir-dar at Samarkand. In that famous historical city the second, or Tartar, manifestation of Persian art is seen to great advantage,

and the constant use of the four-centred pointed arch,[8] although familiar to all students of Persian art, seems still characteristic of this northern school. In the building before us the plan is extremely simple. There is no great hall of prayer, but the leewan seen in Fig. 219 on the left, together with the tribunes around, are places rather for study and for teaching than for prayer; the court itself being probably the chief resort of worshippers. There are two cylindrical halls, each roofed by a cupola rising from a circular drum, one of these being visible in

219—Great court of the Medresse Shir-dar at Samarkand. (From photo by F. S.)

this picture. Behind the spectator as he stands looking into the court is the entrance from without, through a magnificent porch, crowned by a vault nearly forty feet high; but the crowning members of this

[8] Four-centred arch: This, which would be troublesome to lay out for voussoirs of cut stone, is easy to build in brick. Several elaborate rules are given for fixing these centres; but a modern draughtsman would fix the width and height of his arch, and then *feel for* his centres, working experimentally; and there can be no doubt that the Persian would do the same, handing on the diagram of a well-liked proportion to his successor or pupil. The most graceful form is that shown in Fig. 173, *K*, and which comes of fixing the apex *d* on a circumference drawn from *d'*, where the springing line crosses the vertical; but the far inferior shape with the very flat upper curves, having a long radius, and seeming absolutely straight lines, is probably more common. This ugly form is seen in Fig. 219. It is a strong arch whatever its exact form.

porch have disappeared, and the entrance front of the mosque is ruinous.

In the plans of mosques, bath-halls, caravanserais and palaces, it is noticeable how skilfully the halls and corridors are combined, in such a fashion that the necessary dividing walls serve as buttresses to receive the thrust of the vault. No style is superior to the middle Persian style in this respect; but when these plans are compared with Roman plans of the imperial time it is noticeable that the Persian walls are too light to take up the thrusts by mere dead weight and passive resistance. Indeed, the vaults are balanced, one against another; and no style except the Gothic of the thirteenth century has ever gone so far in this sagacious taking up of thrust by counter-thrust. The Persians were aided in the search for this result by their use of piers of their excellent material, hard brick; for it would have been an incalculable difficulty to have brought about so perfect a balance of pressures that free columns should receive only vertical loads. That was achieved by the Gothic builders, indeed; but only in the calculated church-plan: a plan arising from the very necessity of so utilizing small points of support.

The round towers of mediæval Persia are worthy of special study. They are different in principle from the towers of any other land. In no respect do they affect solidity and imposing mass. They could never be mistaken for fortress towers. They are graceful monuments, slender and tall, and covered thickly with elaborate ornamentation. If one could imagine a modern state in which artistic treatment of every-day requirements should be the rule, in that possible state factory chimneys might be treated in this way—designed abstractly as beautiful things in themselves and without close reference to those lower buildings near, which, indeed, have but little correspondence with them in the methods of their design.

The two towers at Damgan may well have been changed more than once during the 800 years that have elapsed since their construction, but the effect sought by the designer was evidently confined to an agreeable slope, contradicted and therefore emphasized by the projection of the balcony near the top, the whole surface being adorned with patterns in brickwork in rather high relief. Not to make too much of this incomplete building, let us take the later towers of the school-mosque Ulug Bey at Samarkand, built undoubtedly in the fifteenth century, which is shown in Fig. 220. These retain some traces of that

characteristic conical top which was so marked in the Damgan tower, and their balcony for the muezzin is of brickwork like the tower itself. But during the three centuries that had elapsed between the date of the Damgan towers and that of Samarkand, the art of surface decoration had taken great strides in the lands north of Persia, and the pattern made now in colour is an ingenious and skilfully designed fret in three or four hues overlaying the whole surface.

220—Entrance porch and minaret, mosque of Ulug Bey, Samarkand. (From photo by F. S.)

Of uncertain date is the tower at Bostam, connected with the mosque of Sheik Bajazet. It is probably earlier than the one at Samarkand. The picture (Fig. 221) shows only so much of the tower as rises above the conical roof of the school hall; and it shows very perfectly the effect of perhaps six centuries of weather on good, hard bricks laid in strong mortar, in a climate neither very severe nor exceptionally mild. The wonderful results that are possible in such relief decoration as this hardly need argument for their exposition.

The Persians of modern times, by which is meant here the years since 1750 or thereabout, have allowed their love for colour decoration to overcome all other considerations. The modern minarets are covered, like the domes of the mosques to which they are attached, with a continuous diaper pattern of floral and foliate design in admirable painted tiles. They have, however, almost no architectural character apart from the judicious holding up to the light of these beautiful patterns.

It is not to be forgotten, however, that the use of coloured patterns

221—Minaret of mosque of Sheik Bajazet, at Bostam (Chorassan). (From F. S.)

by a Persian designer is more significant than that which Europe has known. If we were to take the wall decoration of the Blue Mosque at Tabriz, which is supposed to have shown the full magnificence of Persian painted tiles many years before it was seen in other buildings, we should find that what seem to be large bricks, laid in diagonal order at many different angles—herring-bone, zigzag, and saltier-wise — are in reality plain tiles, generally buff or pale red in colour; and that with these there alternate the variously shaped patterns of glazed or enamelled tile, painted in rich colours with flowers, Arabic letters, and conventional ornaments, but all treated as incrustations, in dull red, but broken by the lines of the joints. Further examination shows that all this tiled sur-

face, both plain and rich, is limited to a thickness of one and a quarter or one and a half inches, and that these tiles are bedded upon at least twice their thickness of strong cement mortar, which overlays the actual brickwork of the structure. That structure is very massive, the walls are from four feet to five feet thick, the great arch of the doorway is at least three feet thick in a single arched ring, so that nothing but earthquake or the extreme violence of man could have reduced the building to its present condition of ruin. This solid structure is covered completely and in all parts by the splendid chromatic decoration described above. The great outer portal, which is nearly complete as to its main lines, is about fifty feet high from the sill to the point of the four-centred arch, and about half as wide, with deep jambs—so deep that, as is common in Persian work of all ages, they make of this gateway an out-of-door hall of some dignity. The skill shown in covering with colour decoration that large space of many surfaces, seen in many lights and exposed at many different angles, is not to be described nor fully understood until days of study have been given to this admirable achievement, where failure would have been so easy. Nor is this success so common as to be unworthy of notice, for even in Persian examples and still more frequently in modern buildings of Turkey and Syria which have taken the idea from Persia, the covering of the interior walls and domes with a constantly repeated diaper pattern is monotonous enough. Even a beautiful diaper and even fresh and harmonious colours may be tiresome if they cover your walls, floors, and roofs with almost unbroken repetition. It is the glory of the Persian designer of the Middle Ages that he knew where to stop and where to emphasize, how to combine by contrast and by harmonious gradation, and, in short, how to produce colour decoration on a scale and with a faultless good taste which the other nations of the earth have never approached.

CHAPTER VI

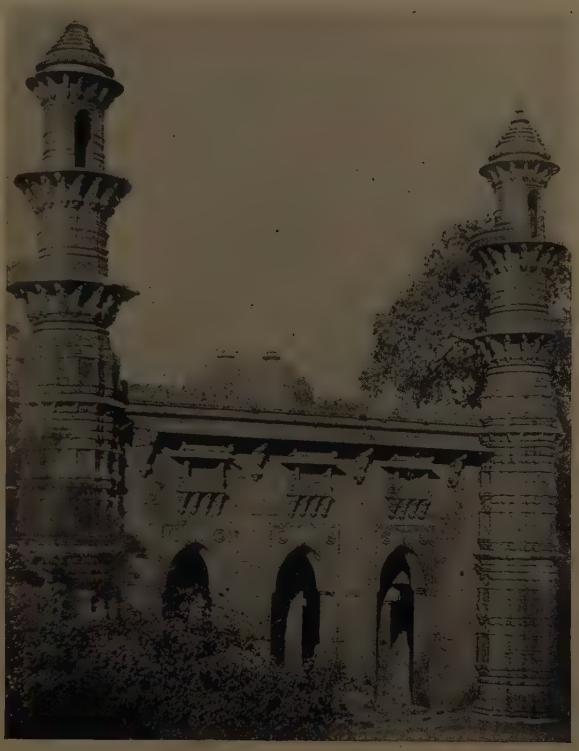
MOSLEM INDIA

THE wave of early Moslem conquest had nearly spent itself when it reached the Indus. Sind, in the extreme north-west, was overrun in the seventh century: and in 711 A.D., the year of the first invasion of Spain, the same relatively small province was conquered. Later, the Moslems were driven out; frontier war raged for three hundred years; it was not till the early years of the eleventh century that the Ghazni, or Afghan, kings conquered the strip of country from Peshawar southward to the sea. The first Mohammedan capital in the Peninsula was Lahore, in the Punjab; and this far northern kingdom was the scene of internecine struggles among the subjects of the Caliph, from 1150 to 1193 A.D. Even nominal submission to the Caliphate seems to have disappeared. The Mohammedan chiefs fought with one another like independent princes, and when the sovereignty at Dehli was established, early in the thirteenth century, it was as the emperors of India that Shahab-ud-Din and his successor, Kutub, claimed to rule India, and were obeyed at least throughout the country north of north latitude 16.

The result of all this confusion, and of the conflicting claims of Afghan, Tartar, Rajput and Mahrattah, is that there is no Moslem style of architecture in India. The famous tower at old Dehli (Delhi) called the Kutub Minar, that is, the minaret of the mosque of the emperor Kutub, was built about 1190, of red sandstone as far as the third balcony, above which it was marble. A dome-shaped cap was ruined by earthquake before 1794; but the tower still remains 238 feet in height. There are twelve sharp, vertical ridges, alternating with twelve rounded lobes, in the lower story; and apparently twenty-four lobes and twenty-four ridges in the stories above. The admirable corbelling of the stories and balconies makes this the archetype of

Oriental round towers; a specimen of what the Persians aimed at but never made so perfect.

At Ajmir (Ajmere), east of Delhi, is another ruined mosque of the same early period. Here and at the Kutub mosque at Delhi, the Persian four-centred arch with the nearly straight-line upper limb is common: while at the Kutub mosque there is also found a decided reversed curve[9] leading to the point, at the great portals. These great doorways are 50 and 54 feet high, in the two mosques.



222—Tomb-mosque of Mohafiz Khan, Ahmedabad. (From photo.)

There is but little important architecture remaining, even ruined, from the twelfth or thirteenth century. At Ahmedabad there are monuments of the empire of Delhi, and therefore of the original Moslem impulse: modifying native Indian ideas of tower and façade. Such a building is the tomb-mosque of Mohafiz Khan, of which the front is shown in Fig. 222. The minarets are only 56 feet high: but their design is most instructive as showing how the inheritors of the traditions of Jain and Buddhist art were ready to meet the new demands upon them. The façade between the towers is of central Indian motives. There are two larger and higher minarets of very similar general design at Ahmedabad: left

[9] Reversed curve: called also (especially when ending in a finial) accolade (see *O* and *R* in Fig. 173). The use of this form in India was largely the result of a system of building by corbelled courses of stone, producing an apparent arch. It is common, however, in later work where the voussoirs are cut with great care, their joints radiating from a common centre.

standing while the mosque to which they belonged has wholly disappeared. They are impressive: but are far less minutely sculptured.

The desire to surpass Hindoo, Buddhist, and even Persian art in the wealth of minute detail, is as evident in the interior of the mosque as in these delicately sculptured towers. The mihrab and adjoining parts are sculptured throughout with the most delicate workmanship, and with a generally fine and appropriate method of design.

223—Marble window-filling, from a deserted mosque at Ahmedabad. (From photo.)

In the fortress of Ahmedabad is a decorated mosque called the Bahdr Mosque—or Bhudder Mosque: really the mosque of Sidi Saïd. The building has been put to use, recently, as a public office, and the marble traceried windows walled up within; because glazed openings, transmitting light but excluding air, were required for the new service. The splendid example, Fig. 223, and another even more complex in design, have been published already. The tracery is built up of about twenty-four slabs of white marble (it is not easy to follow all the joints) and the flower pattern is cut through and wrought on both sides. This mosque seems to have been of the earlier Mohammedan period.

The marked Persian influence which prevailed throughout the rule of the Afghan provinces, about 1200 to 1325 A.D., is seen in the admirable front (Fig. 224). This building, the "Black Mosque" (Kala Masjid, Kala, or Kila Kono Mosque), is ascribed to Firouz Shah, and to the year 1385 A.D. approximately. The illustration gives the outer wall, the wall of the enclosure within which is a relatively small court and a prayer-room about 70 feet long, divided by two rows of four pillars each into squares each covered by a cupola. The cupola which is seen in the picture rising above the great archway is not one of these, but covers a porch of entrance. The strongly Persian character of the design does not detract from its originality; it is certainly an admirable composition; the slight projection from the front of the pavilion of entrance crowned with the dome, and of the smaller pavilions

224—Front of the "Black Mosque," at Dehli. (From photo.)

at the left and at the right, is sufficient to allow of the very different treatment of the arches in the five bays of which the front is composed. A broad band of relief ornament is used to frame in each of the three doorways in the middle of the front. In each case this band is composed mainly of a very elaborately carved Arabic text, reinforced and, as it were, framed by decorative patterns. All this carving seems to be in the fine-grained and tough stone of which the façade is built. This relief ornament unites the central pavilion to the curtain walls in a very fortunate manner.

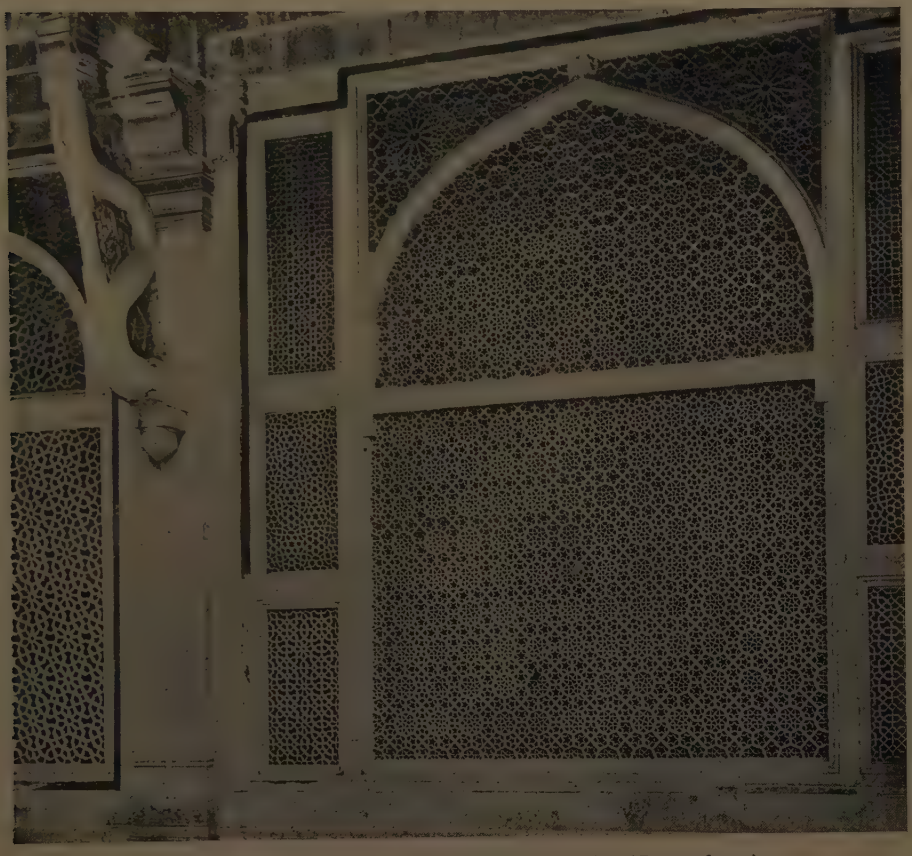
The largest mosque in India is generally reputed to be the Jam'i Masjad at Delhi, which was built in the seventeenth century A.D. The Persian theory of design is more strongly marked here than in the Kala Masjid. Everything is Persian—chiefly the great portal of entrance with its overwhelming and predominant importance. This, as we shall always find in the study of Persian monuments, is an essential consideration. A great entrance arch is a distinct reminiscence of the Sassanian halls of audience, and if the throne of the prince has been set back into an inner hall and is no longer visible from the exterior, the old tradition remains at least in the vaulted hall which was designed originally to constitute the throne-room. The cupolas and the two lofty minarets which complete the external effect of this remarkable building are as Persian in style at the great doorway, and the method in which the great outer court is enclosed by a cloister is of the same origin. The minarets, about 130 feet high, are not very charming in design; as compared with the beautiful towers of Persia and of the towns lying north of Persia proper, considered in Chapter V, they are poor and without artistic significance.

225—Tomb of Sufdar Jang, near Dehli. (From photo.)

A still later building is known as the tomb of Sufdar Jang, a prince whose real name was Abul Mansur. This building, shown in Fig. 225, is almost exactly 100 feet square, and stands upon a very lofty substructure opened on every side in arcades of Persian appearance. A careful calculation of the height, including this substructure, gives the result of 126 feet to the top of the cupola. In spite of the imposing group, the huge, almost cubical building raised high upon its platform, and in spite of a certain grace in the proportions of the separate details —portals, arcades, and domed pavilions—the general design is com-

monplace. The contrast of colour, red stone and white marble, is not well managed, and if we eliminate that feature and consider the building as if it were completely of one material, it would not gain much by the change. It is perhaps impossible, however, to get a better specimen of eighteenth-century Mohammedan work in India.

The student of Eastern art who approaches it from the point of view of one versed in European design, cannot accept as important



226—Marble window-filling at Fatehpur Sikri. (From photo.)

in the architectural sequence, any of these later Moslem buildings. They are interesting mainly in detail; and even their detail is more attractive by its minute delicacy than as aiding seriously in the total effect of the building to which the detail is applied. Of the sixteenth century is the delicately wrought marble grating shown in Fig. 226, a detail taken from the deserted and nearly ruined city of Fatehpur Sikri. These marble screens are no longer to be judged in their

original setting; but a very similar design is seen in the tomb of Mohammed Begada at Ahmedabad (Fig. 227). In this the filling of wall space with piercings, with marble slabs cut through and allowing air and light to pass while giving an interesting pattern in dark on light as seen from within—in light on dark as seen from without—is to be compared with those wooden meshrebeeyeh screens so common in the houses of Cairo, of which there is mention in another Book.

Of all the minute decorations of the late Indian work, that which has caused the most interest among European students is the inlay of

227—Outer wall of tomb near Ahmedabad. (From photo.)

precious and semi-precious stones in marble, a method of decoration which is to be compared with Florentine mosaic; even as the great tables in the Pitti Palace are inlaid with hard stones cut into varied forms, floral and foliate and conventional, the cost of the material being ignored and its colour and lustre considered alone. To a vastly greater extent, the artists of the seventeenth and eighteenth centuries in Delhi, Agra, and Ahmedabad devoted themselves to the production of beautiful colour patterns in permanent and brilliant combinations of hard stone. Of all the buildings adorned in this manner, much the most celebrated among Europeans is the Taj Mahal at Agra, a vast mausoleum begun about 1630 by the Shah Jahan as a memorial of his queen. It has been very often reproduced in photography and by

engraving, and it is better in this case to give in Fig. 228 one of the outlying pavilions, the principal gateway of entrance to the grounds which enclose the famous mausoleum itself. The forms are not very unusual. What we found in other mosques and tombs of the period is found here; that which is especially important to us is the contrast of the red sandstone structural parts with white marble panels and friezes, which light-coloured and translucent surfaces are inlaid with

228—Gateway building leading to the grounds of the Taj Mahal, at Agra. (From photo.)

many coloured stones. The patterns are skilfully and well distributed, though with a certain inadequacy, a certain thinness of design, as compared with fine Persian floral work seen in painted tiles, for which see the previous chapter. Nor is it unfair to draw a comparison between the costly inlay of the Taj with its adjoining buildings, and the less sumptuous painting upon pottery, because it is expressly to imitate the Persian decoration while making it more extravagantly

expensive, that the work was undertaken. It was carried out in a spirit of sacrifice. Royal wealth in command of labour and in the use of precious materials was to be poured out upon the Taj, and the patterns should be judged according to their effect as artistic decoration and from no other point of view. It is evident, however, that the lustre of the material adds something to their beauty. This imparts a new element, another source of decorative effect to the pattern, and this the student who looks at photographs must supply

229—Detail of so-called palace of the Moguls, at Delhi. (From photo.)

for himself, recalling his own recollections of the less costly inlays in *pietra dura* which the museums of Italy offered for his consideration.

The Taj itself is a pavilion crowned with a bulbous cupola rising to a height of 138 feet from the platform. Its plan is a square of 185 feet, with the corners taken off, so as to produce an octagon with four larger and four shorter sides. All the sides are opened up in huge arches, of which the largest—the great portal-arch which recalls the Sassanian throne-room—is nearly 40 feet wide and 64 feet high. All these arches are of Persian form: and the building is a complete

surrender of the massive and stately Indian system of design to the easy and lightsome grace of Iran. The corners of its platform are adorned by four lofty conical minarets, which, however, have no particular merit as towers.

That palace of Shah Jahan at Agra and the palace at Delhi known as the "Palace of the Moguls" are adorned, in almost exactly the same fashion, with inlays of hard stone; but in these cases the decoration is generally confined to the interior halls, such as the room called the queen's reception room in the palace of the fort at Delhi. The Delhi palace is partly shown in Fig. 229, a hall of entrance wholly open to the weather, as is reasonable in a city situated in latitude 29° and never exposed to frost.

The last word of Moslem architecture in India before the English conquest had come to put an end to its aspirations and possibilities, is to be seen in the palace at Seringapatam. This is the garden pavilion built by Tippoo, the conqueror, about 1780. The materials at this period are no longer very costly. The floor is of polished cement; the walls, ceilings, and pillars are painted in bright colours with much gilding, or what passes for gilding; often a metal foil covered by a varnish which keeps it from tarnishing, and which is effective enough. The material which underlies the painting is sometimes stone, sometimes marble, sometimes hard plaster; but that plaster of the Indians is a wonderful material, rivalling in fineness and in uniformity of texture the stucco left us from the great empire of Rome.

CHAPTER VII

MOSLEM ART UNDER FOREIGN DOMINATION. SICILY AND SPAIN

IT was in 827 that a Moslem army from Kairouan in Mauritania landed on the shore of Sicily, and from the years 962 to 1016 the Saracen conquerors held complete possession of the island. From the time of the landing of the Norman knights at Monte Caseno (1016 A.D.) the power of the Mohammedans in south Italy and in Sicily waned rapidly, and before the beginning of the twelfth century the Norman dynasty was perfectly established. During the ninety years which had elapsed from the beginning to the completion of the conquest, the Eastern spirit was strong in the greater part of Sicily, as in much of southern Italy, and throughout the whole region the traces of this Oriental influence were still seen at a much later time. Of the buildings absolutely due to the Mohammedan governors, no important mosque, no great palace nor public building remains; but there are in Palermo two churches of extraordinary interest because of their retention, after many years, of the true Oriental character. One of these is the church of S. Cataldo, shown in Fig. 230. The plan is a very simple parallelogram divided by two rows of columns into nave and aisles, and the wall erected on the nave arcade on either side is carried up above the roof, as seen in the figure. The three domes, then, form the roof of the nave, which is in three compartments. The system of vaulting is almost completely Byzantine in character, and affords one of the most interesting examples of the farthest spread westward of that Persian system of cupola building which we have found so important.

The other example is the church of S. Giovanni degli Eremiti (S. John of the Hermits). In plan that church has three apses, of which only one projects from the east wall. There is a transept which crosses the nave at the extreme east end, and apparently there were

originally three smaller cupolas over this T-shaped transept; the one in the middle, covering what is now the choir, a little larger than the others. The T-shape in a building of Moslem influence is easily accounted for by the use to which the projecting arms in the structure are put. Of the smaller cupolas, one was at a later time replaced by a square tower which carries a little cupola on its top in the guise of roof. The church is of about 1130, but the cloister must be accepted as of European mediæval character and of a date not earlier than 1190 or 1200.

230—Church of San Cataldo, Palermo. (From Kütschmann.)

The two churches described above exhibit very strongly the lingering influence of an absolute Saracenic control; buildings of Mohammedan workmanship designed for Christian rites. And other buildings which remain, all of exceptional interest, are also to all appearance the result of Mohammedan labour and skill put to use in the service of European potentates. In this respect, then, the Sicilian rule of the Normans reverses exactly the Moslem rule in Syria, Egypt, North Africa, and Spain.

As early as 1140 the chapel connected with the royal palace in Palermo was built nearly in its present form. The decoration of that building by mosaics is indeed of slightly later time, but the structure and probably the very beautiful marble pavement in a design resembling the opus Alexandrinum of the fifth century, are all, so far as the evidence may be trusted, of the early Norman epoch, when the skilled workmen of the country must have been the mosque builders as in the previous century. The chapel is so engaged with the buildings of the palace that it cannot be said to have an exterior. Within,

it is a church of short nave, having but five bays with four free classical columns, badly enough adjusted to their new place. These columns carry pointed arches, very much stilted, and these arched openings are without mouldings or other similar ornamentation, while the flat surfaces are covered everywhere with mosaic. The two aisles are narrow in proportion to the width of the nave, opening into a chancel with chancel aisles; beyond which are three apses, all projecting eastward from the sanctuary.

Fig. 231 shows that end of the chapel which is opposite to the sanctuary, with a special reserved, throne-like seat filling the whole

231—Capella Palatina, Palermo. (From photo.)

end of the nave and resting upon a floor raised by five steps, or, in other words, raised to the same level as the floor of the choir. As Count Roger sat enthroned under the cupola of his palace-chapel, he was removed by 250 feet from the choristers and perhaps 320 feet from the front of the high altar; but as his throne was raised at least 11 feet above the floor of the chapel, the intervening congregation would not interfere with his plain view of the religious ceremonies.

A semblance of stalactite construction appears in the narrowing

of the church above the nave arcade and the clearstory windows, and is continued in the whole span of the roof; but it is not probable that this has any constructive value at all. The cupola above the square of the choir is carried over from a square to an octagon by means of very simple and obvious trompes or arches sprung diagonally from wall to wall, and from this octagon rises the dome of circular plan.

232—Interior of La Martorana, Palermo. (From photo.)

The chapel or church known in Palermo as La Martorana was built originally in the reign of Roger II as a church dedicated to the Virgin. It adjoined immediately the church of a convent dedicated to S. Aloysia the Martyr (Martorana) and when the two buildings were thrown into one (much in the way in which S. Lorenzo at Rome became what it now is, as described in Book VII, Chapter II) the name Martorana was extended to the renovated structure. In the eighteenth century the walls were decorated anew and the photograph (Fig. 232) shows how this was done, with much regard for what was assumed to be a good Byzantine system of decoration. The mosaics of the vaults do not seem to have suffered much at that time. They are still excellent specimens of the twelfth-century mosaic work which is found in even greater richness at S. Mark's of Venice. Only in the soffits of the arches near at hand in Fig. 232 are seen entirely obvious pieces of eighteenth-century painting—figures of saints to which have been given all the character of portraits of fashionable ladies in a modern gallery. The plan of the church, as may be partly seen in the

photograph, is of the very simplest character. On either side are three columns dividing a very short nave from aisles of the same length, and at the eastern end are three apses much as in the chapel of the palace. The picture shows the western end and the narrow vestibule which is cut off from the body of the little church by a low marble barrier adorned with inlays of later Italian mosaic. Here the columns carry blunt-pointed arches which spring in all four directions from their capitals. From these arches rise ordinary groined vaulting over the aisles, but the nave is shown to be vaulted with a tunnel vault pointed also to correspond with the shape of the transverse arches. This exists for two of the three bays of the nave, for the third bay is carried up in a low square tower supporting a cupola very much in the fashion of that which roofs the choir of the Capella Palatina. Fig. 233 gives a view, taken vertically, of the cupola and its supports as seen from below. The reader who wishes to orient himself should notice that the Madonna, whose head and body are seen relieved against the light background as if against a piece of linen drapery upon which she is seated, is a part of the mosaic of the tunnel vault on the left or west side and just beyond the opening of the dome, as seen in Fig. 232.

233—Cupola of La Martorana (see Fig. 232). (From Kutschmann.)

This church cannot be said to have an exterior of its own, because a façade in the most pompous style of the eighteenth century was built in 1730 to separate the interesting early interior from the outer world. There is, however, a most attractive tower which, although formerly be-

lieved to be of later date than the original building of the church, is undoubtedly a characteristic specimen of the twelfth-century Sicilian, using the Saracenic methods of design.

The famous cathedral at Monreale, south-west of Palermo, is of the close of the twelfth century. The date 1173 has been fixed with close approach to accuracy for the beginning of the work upon this church. The roof, as seen in Fig. 234, is much later, but great intelligence and good taste were shown in the choice of a simple basilica roof for this interior. The fire which destroyed the old roof marred the interior very much and it was then cleaned and the mosaics repaired. The twelfth-century wall decorations were much injured by this fire, and were renewed at great cost and with all possible care during the years from 1811–1860, much of the cost having been borne by that King Ludwig II of Bavaria, famous for his attempted architectural reforms in his own capital (see Vol. III). On all these accounts the architectural interest of the interior is seriously marred, and yet there can be no doubt that the general disposition was observed in all respects. The plan is obviously unaltered. The photograph shows five of the eight bays of the nave and beyond it the great square which, as in the Martorana and in the Capella Palatina, is carried up to support the dome. The colossal mosaic of the Saviour filling the semi-dome of the apse is famous among students of mediæval architecture.

234—Interior of Monreale Cathedral. (From Kutschmann.)

It is one of the most interesting coincidences possible, the close

correspondence in date between these later Sicilian buildings of Saracenic-Norman origin, and the Gothic buildings of north-western Europe. 1173, when this church was begun, is almost exactly the date of the beginning of the Gothic cathedral of Soissons. In that year the cathedral of Paris was under way and was passing from its transitional to its completely Gothic form; six years later the new and perfectly Gothic vaults of Noyon were built and the admirable cathedral of Laon was on the point of rising from the ground in its present form. The Gothic style was then so far established that all the cathedrals of the great bishoprics were under construction or about to be re-

235—La Zisa, Palermo. (From photo.)

constructed so absolutely that forty years later at least twenty of the great Gothic churches were finished and as many more were far advanced. In brief, the Siculo-Norman style, to which this chapter is devoted, replaces in every respect the later and developed Romanesque of the northern nations and even of Spain and north Italy. The true Gothic style coming from the north invaded Italy and reached the south of Italy and the island of Sicily so early that the Saracenic building passed into that northern style without other changes. We find, as explained in the third volume, that the style changes abruptly and without intermediate steps of noticeable importance.

A word should be said of the two rather celebrated civic buildings which stand in the near neighbourhood of Palermo, La Cuba and La Zisa. They have been so much and so frequently rebuilt that their essential character is no longer traceable without much

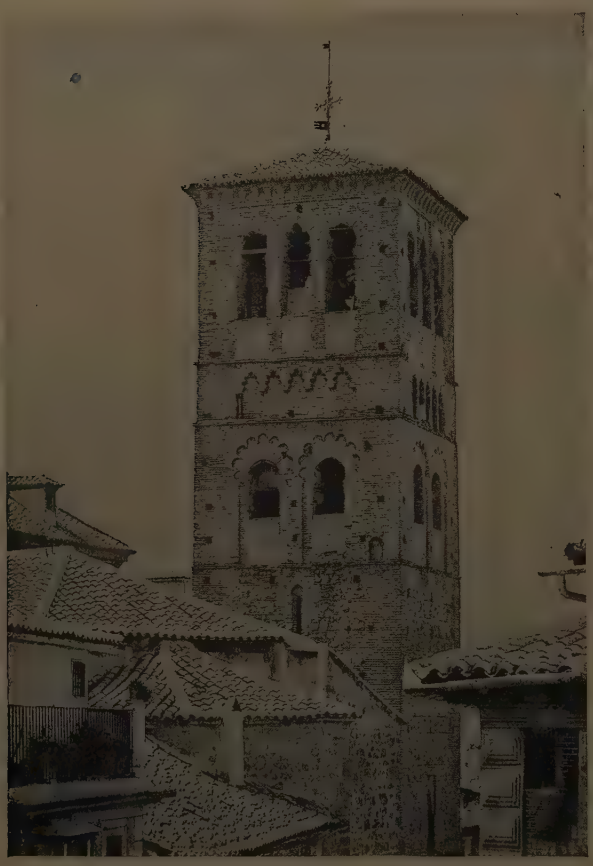
subtraction of the building of additions of later date. Fig. 235 shows La Zisa as it was about 1870, and it should be noted that while most of the blind arches were windows in the original design, the square windows cut through them are entirely modern. It does not appear that there were any window openings on the exterior. The little palace of pleasure, or summerhouse, or pavilion of rest seems to have taken all the daylight for its smaller apartments from a court—an atrium as completely sufficient for the rooms around it as that of a Roman mansion. On the other hand, in La Cuba, at least one of the great

236—Apse of the church, El Cristo de la Luz (see Fig. 208). (From photo.)

arches was open originally and built up later. There is nothing left of any archæological interest whatever in the interior except the stalactite vaulting of the lobby of La Zisa. There are some decorative mosaics in the same vestibule, but their epoch cannot be fixed.

There are certain details of architectural decoration which gained a strong influence over the southern builders during the Moslem epoch. One of these is the interlacing of pointed arches very freely used in the exterior of buildings, but used merely as superficial ornament without constructional importance. It is in that way that the east end of the cathedral of Monreale is richly adorned, the arcading

as described passing around all three of the apses; and a similar piece of apparent arcading ornaments the west front between the two unfinished towers. The famous and much studied cloister, immediately south of the cathedral, is so closely allied in design to the buildings named above, and especially to the Martorana tower, that it is hard to exclude it from this chapter. There is, indeed, but a narrow line of chronological distinction between the unmistakably Moorish character of the later Sicilian buildings described in this chapter, and the first buildings erected in the Gothic style; and yet the distinction between the Oriental influence and that of the Angevin conquerors, each forcing upon a Sicilian race of Romanized builders the pointed arch, with all its concomitants, must be carefully maintained. It seems on the whole best to leave to Volume III the consideration of the Monreale cloister.



237—Tower of S. Tomé, Toledo. (From photo.)

The cathedral of Palermo has many traces of Saracenic influence, but these are of minor importance and disappear almost wholly in the mingling of Gothic and Post-Gothic styles which have been employed for the marring of what would have been otherwise one of the greatest church designs in the world. It is described in Volume III.

On the mainland of Italy there are a few most interesting buildings which show traces of Saracenic feeling. Of these the most im-

pressive is certainly the octagonal cupola of the cathedral at Old Caserta. Its chief distinction—that which makes it peculiarly southern and in a sense Oriental—is the system of interlacing arches in the lower story. Apart from that it is not essentially different from Romanesque towers at the crossing of Spanish churches. The tower of the cathedral of Ravello is somewhat of the same character as that of the church of the Eremiti at Padua. Otherwise the Oriental

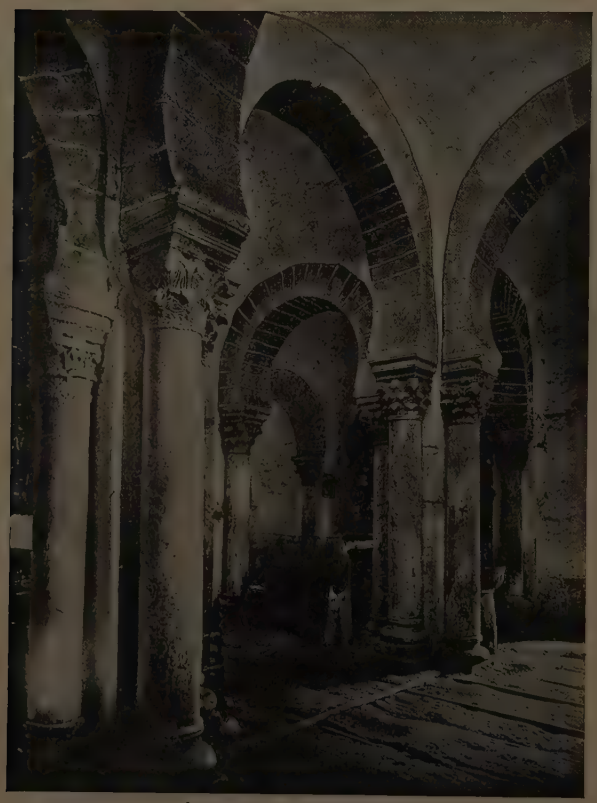
238—Portico of S. Miguel de Escalada. (From photo.)

details of the continental churches are generally confined to sculpture about doorways and bronze valves of the doors.

. . . . . .

In Spain it is far more difficult than in Sicily to determine the exact dates of the different early buildings and of the different parts of the same church or synagogue. The apse of El Cristo de la Luz at Toledo is shown in Fig. 236. There can be no doubt that this apse was built at a time after the complete reconquest of Toledo, city and state, by the Christian princes of Castile and Leon. That conquest dates from 1085, and the work seen in these high arched openings of the second story is evidently of a fashion not introduced into Moslem work at so early a period. On the other hand, its fashion is not one

which we recognize as a part of the Romanesque work of Spain, or of other countries of Europe. The horseshoe arches of the window openings can be plainly seen to have been built of brick set radiating from a single centre, and cut afterward to the curve desired, while the spur which carries the curve of the arch inward beyond the jamb is worked in the stone cap which terminates the pier on each side. So with the outer arch, which is cinquefoil on each side; it is built of longer and shorter bricks, partly set and partly cut to the curves required, and this in a totally non-Romanesque fashion.



239—Interior of S. Maria at Lebeña. (From photo.)

The two bell towers at Toledo, those which belong to the churches of San Roman and Santo Tomé, are of an epoch as late as the apse of the church of La Luz and are even more striking in their Moorish character. That of S. Tomé is given in Fig. 237, and the beautiful tower of S. Roman from which, as the records of the town state, the accession of Alfonso VIII of Castile was announced in 1126, is very similar in design. There is, indeed, no absolute evidence that these towers were not completed during the Moorish ascendency. It is conceivable that such brickwork was done before 1085 by the skilled bricklayers of the Moslem population in that famous seat of Islam in Spain. In the absence of documentary evidence the character of the building, its evident fitness for a bell-tower, and the absence of any preparation for the muezzin's gallery which alone would fit it for the minaret of a mosque,

all go to confirm the general opinion of the student of Spanish art and to establish this as another piece of the Moorish work done under Christian direction. Something of the same character is seen in the spirited group of the little church of Santiago del Arrabal.

A few traces of this artistic influence of the Moors remained throughout the Middle Ages in the practice of Spanish building; and this wholly apart from the affectation of the Mudejar style. Thus the church of S. Miguel de Escalada in the province of Leon, and thirteen miles from the city of that name, is a very simple basilica, with the nave arcades carried out in horseshoe arches, smaller horseshoe arches forming the open narthex through which the church is entered, as seen in Fig. 238. The stone of the neighbourhood has been cut into voussoirs with tolerable accuracy, and it is interesting to see the whole lower part of each pair of arches—the abutment as far up as the haunch on each side—cut in one piece, or in some cases with a single horizontal joint, so that the arch is really segmental only, and its limit is marked by the slight projecting moulding of the extrados. It is stated to have been founded by monks of a monastery at Cordova, who took refuge in the Christian kingdom, as early as 913. It is curious to trace the methods of design of the hated persecutors in the work of their victims. So in the little town of Lebeña there is the church of S. Maria, with only traditions to the effect that it was once a mosque, and with its very remote north-western situation to deny the probability of this having ever been true. Fig. 239, however, confirms the legend with the very interesting detail of western Moslem appearance.

BOOK IX.—THE DEVELOPED OR LATER ROMANESQUE

CHAPTER I

ITALIAN LATER ROMANESQUE

ROMANESQUE architecture has been defined in the introduction to Book VII. In the history of Italian art, the term covers all the building of the Middle Ages, from the time when a non-classical round-arched style was completely established there, about the beginning of the sixth century, down to the classical revival in the fifteenth century; always excepting such building as was done in close imitation of the Gothic styles of the North. There is, however, a relatively complete and organized Italian Romanesque, and this forms the subject of the present chapter. That style which we speak of as "Italian Gothic" existed side by side with the Romanesque from about 1175 to 1425 A.D.; and at the very dawn of the Risorgimento [1] the great portico of Orcagna, the Loggia dei Lanzi in Florence, is still a Romanesque building in its artistic design. This and similar survivals of the earlier and simpler feeling are treated in Vol. III.

The earliest form of Romanesque is that treated in Book VII, Chapters II, III, and V. We call that style Early-Christian, or Latin and Byzantine. It is well enough to do so, because the more limited terms bring us nearer to historical accuracy. Still these buildings are all Romanesque, even those of the eastern empire with its tend-

[1] Risorgimento: rebirth, revival; especially the Italian classical revival of the years from ca. 1420 to 1500. The periods following this are the cinquecento, and the classicismo of the seventeenth century, a period of decline often called the Decadenza. As the term Renaissance is often used, in German as well as in English, to cover all neoclassic art from 1420 to 1789, it is expedient to employ other terms for discrimination, leaving the term Renaissance as especially denoting the French movement of the sixteenth century under Louis XII and François I, and similar phenomena in the Low Countries, in Spain and in western Germany.

encies toward the study of Persian vaulting and the light cupola on pendentives.

In the third quarter of the ninth century was built a large part of the great church of S. Ambrogio at Milan. The general plan of the church, and of the atrium or parvis upon which its doorways open, can be judged from the bird's-eye view (Fig. 240). There are three apses, the middle one corresponding with the broad nave, which is made up of four great square bays. The aisles, each less than half as wide as the nave, are divided into smaller bays, two to each one of those of the nave; as can be seen in Figs. 241, 242, and 243. As the nave was unusually wide for a building of early time, about 45 feet in the clear, there was difficulty in vaulting it, as becomes evident when the curious ribs of brickwork are considered. These immense ribs have been rebuilt at least twice in modern times. In certain places they had settled away from the vault, leaving a clear, open space, a fact which has led some students to assume that the ribs were built as a part of the centring and never removed. In our own time, however, about 1880, they were built again in the course of a restoration, and their form was changed to make them more absolutely Romanesque in character. It was then the opinion of the persons who examined the work that the ribs had been built in the first place during the Gothic period, perhaps the thirteenth century; but this supposition seems to be disproved by the form of the great compound piers, of which the nook shafts are obviously designed as imposts of the diagonal ribs; that is to say, as vaulting shafts.

The weight of evidence in regard to the date would seem to fix the whole church, except the three apses and including that portico of the atrium, which is the narthex and forms rather a part of the church proper than of the atrium, as being of the date stated above, ca. 870; while the other three galleries of the atrium are somewhat later, and the apses of the church are of the eleventh or twelfth century.

Fig. 240 gives a bird's-eye view of the church and atrium together. The southernmost of the two square towers, that on the right, is thought to be of the seventh century, the northernmost one being of the completed Lombard Romanesque, and probably of 1129. The octagonal tower which rises above the sanctuary and is supported by the great arches of the fourth double bay of the nave, is also of the twelfth century, but this replaces, evidently, an earlier central tower which was probably square. The roof, also, has evidently been par-

tially rebuilt, as the photograph shows a decided break, like a low clearstory, due to a change in the pitch of the roof. This break is entirely out of place here, there being nothing in the construction of the church to call for a clearstory; and the original roof unquestionably followed the lines of the west gable. The church has always been the especial glory of Milan, the centre of its religious activity, the peculiar home of the earlier bishops and archbishops before the erection of the newer cathedral. On this account it has been continually

240—Front of S. Ambrogio, Milan, looking downward into the atrium from the north (see Figs. 241, 242, 243). (From photo.)

kept in hand, and partial rebuilding in the guise of repair has been frequent. On the other hand, the character of the early church has been preserved, and nowhere in Europe is there so perfect an example of the early Christian basilica of the more prosperous times, carried out in a city-state whose military strength gave security and whose resources were sufficient for the work.

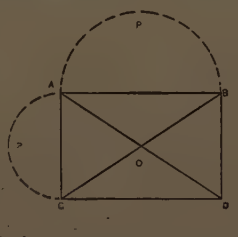
Figs. 241 and 242 show the cross-section and the longitudinal section of the church, as it was before the restoration of 1875, when the arches of the early period were still in place. Fig. 243 is a plan of

the system of vaulting.[2] It shows one great vaulting square, and the two smaller vaulting squares of the north aisle which correspond with the single square of the nave. There is an obvious want of logic in such a plan, because the piers at the angles of the great square receive the thrust of vaults on every side and are steadied thereby, whereas the pier half-way between those receives the thrust of two vaulting squares, namely, those of the aisle, and has nothing on the nave side to counteract those thrusts. This difficulty can, of course, be overcome by perfectly legitimate constructional devices; but the Italians were careless about such constructive propriety as this, and were content to use iron tie-rods to steady the vault at any place where it was thought to be required, or even expedient. It is a matter which continually forces itself upon the student's notice, the large and careless way in which the Italians, at all periods since the passing away of pagan civilisation, have treated the builder's art. They were, indeed, rather a nation of designers—wonderful workmen in colour and in form—than a building race in the stricter sense.

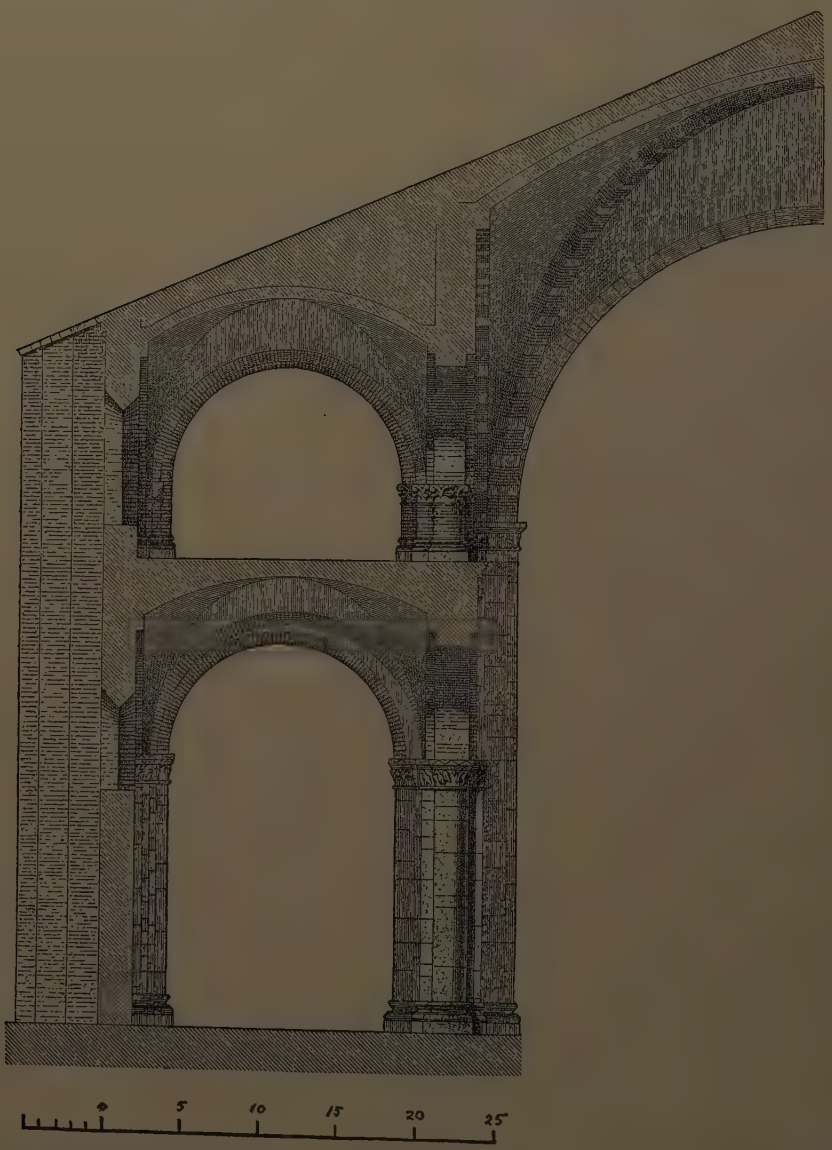
The plan in question, that involving large bays of the nave corresponding to smaller bays of the aisles, was popular in north Italy and continued in use throughout the mediæval epoch. It was used more especially for the larger and more costly churches (compare what is said below of S. Miniato near Florence, and S. Zeno at Verona).

Returning to Figs. 241 and 242, it will be noted that each bay of the nave and also each bay of the aisle is domed up, the vault rising above the transverse arches. In the aisle there is no rib of any kind and the vault is a groined vault pure and simple, but in the nave the great arch-ribs already mentioned have been built at the groins of the great vaults. This is not to be mistaken for a moment for true

[2] Groined vault: a vault in which two or more tunnel-vaults (wagon-vaults or barrel-vaults) intersect, making what are known as groins, the solid angles where the two, generally cylindrical, surfaces meet. The figure shows the ground plan of a groined vault of which *O* is the crown and the diagonal lines *O B*, *O C*, etc., are groins. These are, in the present instance, of right-angular form where they leave the abutments *B*, *C*, or *A*, but continually become more obtuse as they approach the crown, and at the point *O* disappear entirely, leaving a surface approximately flat. The appearance of such a vault can be judged from Fig. 299 in Vol. I, and Fig. 304 of the present volume. These vaults are always built upon centres which are usually of wood. It is natural to build the angles, the groins, with special care, using larger stones for that part of the vault, and cutting them accurately.



ribbed vaulting—such as we find in the mihrab cupola of the mosque at Cordova (Fig. 207), or such as made up the chief motive of the

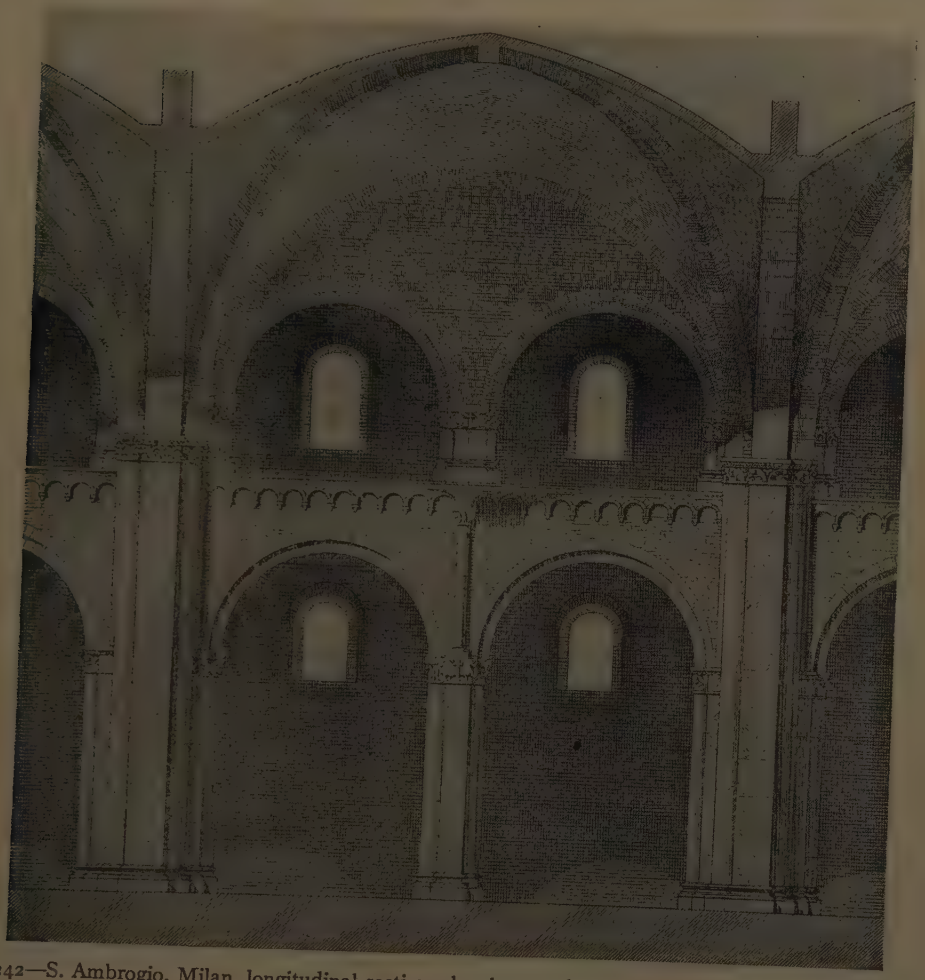


241—S. Ambrogio, Milan. Cross-section showing one-half of nave, and aisle with gallery above, before the restoration (see Figs. 240, 242, 243). (From Eu. A.)

Gothic style at a later time. The vaults of S. Ambrogio are as uniformly built, as homogeneous, as any vault built since the time of the Romans.

The capitals of S. Ambrogio are unusually beautiful for their epoch, having more variety in the sculpture and more artistic significance than is common at that period.

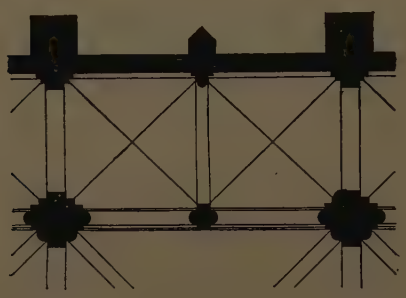
The church of S. Michele at Pavia is very similar to the church at Milan in the distribution of its parts. The differences are differ-



242—S. Ambrogio, Milan, longitudinal section, showing one bay of the nave, before restoration (see Figs. 240, 241, 243). (From R. R.)

ences of detail alone. The great vaulting pier at Milan is a square pilaster between two quarter-round engaged columns; at Pavia it is a series of square pilasters, each one breaking out from the one behind it. The smaller vaulting pier, that which corresponds to the starting of the vaulting squares over the aisle, is a single engaged col-

umn at Pavia—at Milan it is a pilaster upon which the very small engaged column is carried up to the level of the gallery floor. Then the gallery above the aisle is divided by piers. A section of each would be almost exactly the same in the case of the two churches; and the disposition is in all respects alike. The church at Pavia has lost its great atrium and narthex, and it is very probable that a part of the church proper has also been destroyed, for the nave is only two great bays in length, as compared with the four bays of S. Ambrogio. As if to make up for this loss, it has two projecting arms of a very decided transept. The balance of opinion as to the date of this church would seem to be for the last decade of the tenth century; but it is constantly to be kept in mind that the dates of the earlier Lombard churches are comparatively unsettled. There is excellent reason to suppose that parts of the mosaic pavement are even of the seventh century, and the acceptance of both these dates would make necessary the conclusion that the pavement had been preserved through a rebuilding. This, however, is not out of the question; and moreover it is certain that the church as we now have it is not the original basilica, but one built very nearly upon the early foundation.



243—Plan of aisle vaulting of S. Ambrogio, Milan (see Figs. 240, 241, 242). (Drawn by E. P. C.)

A study of the front of S. Michele does not help those who are puzzling over the date of the structure. Even if, as suggested above, the church was cut short at a later time and a new west front built at a point much nearer the sanctuary at the east end, that front would have been of a very early period. As given in Fig. 244 it shows signs of rebuilding, and of redesigning in a sense, for the great engaged piers which ascend from the pavement to the coping of the gable imply an abandoned design for a greater and higher front than the one we have before us. There is frequent occasion, in treating of the Romanesque and Gothic periods, to note the disposition of the Italian builders to carry up lofty fronts above the line of the actual roof, perhaps with the purpose of heightening the clearstory and the aisles to correspond. There exist, indeed, such fronts of Romanesque style, as in the case of S. Michele at Lucca, given below. Such a motive

was probably in the mind of the designer of the present front of S. Michele at Pavia; and when his ambitious plan had to be abandoned, the present very simple and inexpensive front was, we cannot but suppose, built in between the lofty piers which he had begun. This simple façade, therefore, does not agree with the roofs behind it; and on this account is far less important to our inquiry than the generally constructional front of S. Ambrogio, as seen in Fig. 240.

244—West front of S. Michele, Pavia. (From photo.)

It is curious to see how simple have been the motives of decoration employed by the designer of this front of S. Michele at Pavia. He has put in a cornice arcade of unusual size immediately below the rake of the coping, and he has arranged this with great skill and a sense of proportion. He has pierced the wall with double and single windows, without much reference to the interior, but with ideas of his own as to fenestration—ideas which are worthy of note. The sculptures,

which have caused great discussion by their rudeness and still more by the entirely unskilful placing of the carved slabs in the wall, may be assumed to have belonged to earlier monuments which have been destroyed. We can understand the feeling of the artist who, having to build a front at small cost and having at his disposal certain sculptures of some intrinsic merit and in fairly good condition, has used them to break up and diversify the otherwise too plain surface of stone masonry. He had found three monumental alto-reliefs of some dignity: a Madonna treading on a dragon, which he placed above the middle doorway; and two figures of robed clergymen—bishops, perhaps of the church itself, taken from their tombs—and those he placed above the side entrances. Then the sculptures which seem to have come from the earliest Lombard monuments, reliefs of small scale, some of them apparently pagan in origin, others touching subjects popular with the early church, have been arranged in bands across the lower part of the front, all within reach, all easy to read and understand, as none of them can be more than 20 feet above the pavement. These bands of sculpture are not to be called friezes, because they have no definite place in the design; they are simply courses of stone or marble with sculptured face, interspersed with the plain courses which make up the face of the wall.

Such unorganized fronts are common in Italy, and they are charming in their primitive way, as if built by children. They contain, also, much very beautiful detail. Thus, a finer and more dignified doorway than that of S. Michele, though less abundantly sculptured, is that of S. Celso at Milan. In this case the oak doors have been preserved; not indeed, those of the ninth century or tenth century which first closed this entrance, but, still, doors of an early and interesting period. The sculpture of the lintel above the door is of extraordinary interest. Much discussion as to its date has been carried on by those who maintain its seventh-century origin, and those who cannot accept so early an epoch. The sculpture which is still preserved in the archivolts and in the capitals seems to be somewhat later than this lintel, and the student of iconography would probably fix the earliest conceivable date, sixth or seventh century, for the dwarfed figures of the lintel; and the eleventh century, perhaps, for the strictly architectural composition above and on either side of it. So with the very interesting cornice-band at the top of the door-piece, above the arches. This is so severe, so carefully carved, so intelligent in its

design and so sharp in its execution, that it must belong to a better period for architectural sculpture than the seventh century. It must be taken as part of an eleventh-century door-piece into which a much earlier lintel was introduced by the builder, probably in reminiscence of an earlier church which had been destroyed.

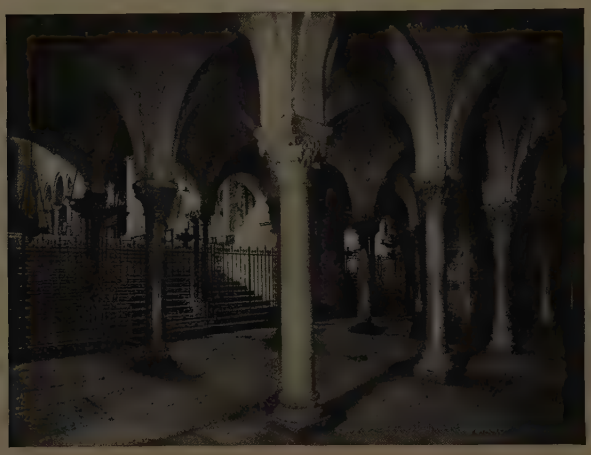
A door which is to be compared with those of S. Celso and S. Michele is that of S. Pietro in Ciel' d'Oro, in Pavia, but it has been

245—Interior of nave of S. Zeno, Verona, looking toward the east end (see Figs. 246, 247). (From photo.)

reworked (though carefully) in the nineteenth century, and has therefore lost all archæological value.

The church of S. Zeno at Verona is one of the most beloved by students of Italian art of all the buildings of northern Italy. Under the augmented name, S. Zenone, it is more often cited than any other building of about the same date, and that because of its unexampled charm. Every part of it commands admiration. Fig. 245 is a view looking toward the choir and crypt. It is seen to be divided into greater and smaller bays on the same principle as that followed in S. Michele at Pavia and S. Ambrogio in Milan, but S. Zeno has never

been vaulted, as far as its records go—and its curious wooden roof would deserve our study were it not that a still more elaborate roof of the same character is found in another Veronese church—S. Fermo, treated in Vol. III. A complete study of the church would take a volume, for it abounds in exquisite details, all of which, either by the skill or the good fortune of the builders, are found to harmonize perfectly with the general design. The three arches seen in the middle distance support the floor of the choir. Beneath and through these arches one descends into the crypt, for which see Fig. 246. The sculpture of these archways has been retouched with the chisel more than once in the course of the centuries, but it has not been ruined—it still preserves much of its original semi-Oriental character, and it can still delight the student. The columns of red Verona marble which support this arcade can be partly judged by the example seen. Fig. 246 is the crypt as seen by one who stands beneath its vaulting and looks outward to the nave. The great stairway leads to the floor of the nave. Farther to the right is indicated a flight of marble steps leading up from the nave to the choir—steps which in Fig. 245, on each side, are hidden by the columns of the nave arcade. The crypt itself is seen to be vaulted in the perfected Romanesque style, with a complete system of round arches sprung from pillar to pillar and enclosing every vaulting square. From these arches, treated as permanent centring, the masonry vaults have been built with simple right-angled groins, and domed up very little, the crown of each vaulting square rising not more than eight or nine inches above the extrados of the transverse arch from which it springs. The vaults counteract one another's thrust in a perfect way so that the slender shafts of not very strong or durable marble, rich as it is with delicate veining, have supported them through the centuries without the use of iron ties.



246—Crypt of S. Zeno, Verona, showing steps to nave (see Figs. 245, 247). (From photo.)

The exterior of S. Zeno, as seen in Fig. 247, has preserved its antiquity. The wheel window, though not as early as the rest of the façade, has the name of being the earliest of its class, and the porch, resting upon griffins cut in marble, is celebrated, and has been the subject of unnumbered studies for painting. The bronze doors are very interesting ones, of a date much earlier than that of the church itself, and are perhaps unique in their character, as representing a forgotten epoch. They generally stand open and are concealed by heavy oak doors in which a wicket has been cut. The sculptures in the marble wall on either side of the porch are of a later date, but equally decorative in effect. If they were as numerous as those of S. Michele at Lucca they would be as famous, for nothing can exceed the skilled sense of decorative effect shown by the sculptor of the Temptation—to mention only one of the sixteen, the admirable series which form this composition. Sculptures of similar character are found on the lintels which stretch from the front of the church to the capitals of the columns on either side and carry the arched roof of the porch.

247—Exterior of S. Zeno, Verona (see Figs. 245, 246). (From photo.)

The extreme eastern part of north Italy had always been controlled by the emperors whose throne was set up at Constantinople; the towns of the Venetian lagoon, in political evolution throughout the Middle Ages, losing their political dependency only as the eastern empire grew weak and the Venetian republic strong. The towns of the mainland subject to Venice during the long period of her power show nearly as strong a trace of Eastern art in their buildings as the city of Venice itself. At Verona even the cloisters and the towers have an Eastern look, and still more does the sculpture show this Asiatic influence. Vicenza has been almost wholly rebuilt in recent times, but at Padua there are the remains of many ancient buildings,

and they, too, show influences of the East. The Church of the Hermits (S. Agostino degli Eremitani) is so rich in paintings of immense importance in the history of art that it has always been kept in hand as a place of resort for foreigners and students of art, and therefore it has been renewed at many periods. This church marks the extreme limit of pure Italian influence over these Venetian lands; and the lonely and almost deserted church of Pomposa, near the Adriatic in the province of Emilia, has retained most completely the Oriental influence. This church has not benefited from continued care, and it has not been ruined by restorations. Fig. 248 shows the remarkable narthex, in the wall of which sculptures of early time have been included with more intelligent system than that shown in S. Michele of Pavia. The octagonal pillars of brick which support the arcade are probably more recent than the arches. There can be no doubt that some skilful bricklayer from Venice or Ravenna shored up the arches, took out the marble shafts which once supported the arcade, and built these carefully laid piers in their place. The curious campanile is one of the earliest existing of the square towers of Italy.

248—Narthex of church at Pomposa. (From photo.)

In Chapter V of Book VII the little church of S. Fosca at Torcello was described in connection with the cathedral and other buildings of that interesting place, and the apse of S. Fosca was mentioned as of later date than the body of the church. Of the same later epoch is the eastern end of the church of Murano in the Venetian lagoon. This is the church dedicated to SS. Maria and Donato, and generally called Church of San Donato. Its beautiful apse, flanked by the aisle walls crowned by half gables, has been restored since 1875, and, while the charm of the decoration is marred, the constructive charac-

ter of the east end considered as a composition in masonry is perhaps more evident. Fig. 249 shows this apse in a photograph taken since the restoration spoken of, although an even later rebuilding has modified it still more. Fig. 250 shows a part of the apse and nearly the whole of the southern lean-to as they stood before 1860, and before any restorations of moment had been carried out.[3]

Referring now to both these illustrations together, it will be seen that brickwork of rather a seemingly unfinished character is combined

249—SS. Maria and Donato, Murano, in the Venetian Lagoon; the apse before the later rebuilding (see Fig. 250). (From photo.)

with delicate work in marble in the way of slender shafts, highly wrought cushion capitals, and moulded bases, all of marble, and the insertion of sculptured panels of generally Byzantine type. A double row of sunken triangles will be noticed crowning the lower story of the whole east end, and of these two bands of triangles the lower is car-

[3] This photograph was made by the optician Ponti about 1858, and before any repairs of consequence had been put upon the church. Ponti was one of the first persons to use photography on a large scale. Visitors to Venice will remember his shop on the south side of the square of S. Mark, and will remember that the photographs bought of him even so far back as 1860 have kept their condition very well. Ponti was proud of his services to art and archæology, and claimed that his work in this direction had begun about 1846.

ried over the round arch which rises the highest at the end of the north aisle, seen on the right in Fig. 249. The south aisle has a similarly high-arched panel raised above the neighbouring panels and windows, but on this side the decoration by the triangles is not preserved. Those triangles, whether on the horizontal band or in the archivolt, are filled up with slabs of marble; sometimes of rich colours, and then generally flat, and merely a polished slab used for its beauty as a patch of vivid and yet harmonious colour; sometimes with white marble, and then elaborately sculptured in low relief, or rather by means of sinkings, leaving the pattern in relief between the incisions. A few of the coloured marbles are also carved very slightly; and there exists still another form of adornment made by the filling of the triangle with a plain surface of coloured marble in which a small, round-headed panel, generally white and very richly sculptured, has been set—an inlay upon an inlay. All of this was still very traceable in 1860, and recollection of it is helped by the careful and absolutely faithful drawing in colour to be found in Vol. II of Ruskin's Stones of Venice. In that drawing, as in the larger photograph (Fig. 250), the ornamentation by means of bricks in horizontal zigzag is shown. It is seen in the photograph (Fig. 250) that the marble capitals of the upper story had been replaced before that photograph was taken. This had been done because the marble had split or crumbled so as to endanger the whole superincumbent wall.

250—Southern part of east end of SS. Maria and Donato, Murano (see Fig. 249). (From photo.)

The remaining ancient capitals of this apse are worthy of very close study. Their small size, their simplicity, the absence of any wish on the part of the designer to produce a more effective capital by combining those of two twin capitals into one, is all very instructive, when compared with the lavish richness of colour decoration given by the double band of triangles.

The marked peculiarity of the design is in this—that a sculptured slab of white marble was evidently considered artistically as equivalent to a slab of brilliantly veined marble left smooth and polished to show the colours. The two motives were used indifferently, as it would seem. The use of plain brickwork to get effects of light and shadow is fairly well shown in this picture.

These churches at Torcello and Murano are basilicas of the earlier type described in Book VII, Chapter V. The apses have all the character of a later and more ambitious style than that of the basilicas.

In the city of Venice the water streets have preserved even to the present day some traces of Romanesque and Byzantine design. In earlier but still recent days there was much more of this, and what existed was in better condition. This seems like mockery when we think of the defaced state of some of the beautiful buildings which we have had to study; but the style which in Venice is always called *bizantino*, or by careful writers *bizantino lombardo*, is still traceable; and forty years ago it was most interesting to study. On the Grand Canal at the left-hand side going up—that is, going away from the Salute and the harbor—there stood in 1870 the façade shown in Fig. 251, and this was known to be what remained of the Fondaco dei Turchi, the "factory" or exchange of the Turkish merchants. The building has been restored, or rather rebuilt, since that time, and is now the Museo Civico, based upon a private collection called the Museo Correr, with a most interesting exhibition of local antiquities. The building, as it stood before the alterations, and as seen in Fig. 251, has two wings or end pavilions in which windows divided by piers replace the continuous open arcade of the space between, with its eighteen smaller arches above and ten broader arches below. In the wall a part of the sculptured decoration is of marble, and part of the incrustation of sculptured panels is seen on the extreme right above the little one-story house which is shown as built on the quay, the *fondamento*, in front of the ancient building. The characteristics of the style are stilted arches with a stilt nearly as high as the width of

the opening, a sheathing everywhere of thin slabs of marble, the slabs being cut to a curve and fitted under the arch so as to enclose the soffit with a marble coating, able in itself to keep its place, as an arch of thin section, and the decoration of the edges by that curious Venetian moulding made by cutting away alternately one and the other edge of a square-edged fillet, and the use of florid sculpture in capitals of Corinthian design, which is so commonly identified with the adorn-

251—Fondaco dei Turchi, Venice. (From photo.)

ment of the front of the sea-city—all these were traceable even in the ruined façade.

On the other side of the Grand Canal, and not far from the Fondaco dei Turchi, is the station of the Traghetto or boat-ferry of the SS. Apostoli. The passage from the paved street behind to this ferry is through or beneath a most interesting *bizantino* palace, a building which, as shown in Fig. 252, was built complete before the twelfth century. The archivolts of all the arches are preserved, except those openings of the water-story on the right of the large archway over the alley. The group as it remains to us, one large and two smaller arches, the smaller ones having much the greater stilt, is very attrac-

tive. In the arches of the upper story it is noticeable how much is made of the reversed curve of their extrados, the Venetian moulding being applied to this double curve. The spandrels, then, of all these arches are adorned with those richly sculptured panels which themselves are shaped to nearly the same ogee curve above and a square-edged sill below, as if they were little windows, and between these are circular medallions and shields of arms, which last, however, were undoubtedly renewed at a later time. Later is also the light iron-

252—*Bizantino* palace, Venice, often known as Palazzo Zorzi. (From photo.)

work of the upper balcony, and still more recent the formal railing of the large balcony below; these have nothing to do with the *bisantino* design. The tympanums of the upper windows have been destroyed and replaced; the constantly existing need of blinds, awnings, and screens hung from lintel to railing of balcony having overcome any love of the ancient masonry.

A round arch with an even more marked horseshoe curve and a still earlier system of sculpture is a doorway opening on the little

Corte Sablionera, in Venice. This is called also Corte del Milione, because it is associated with the family of Polo, and with that famous Marco Polo, who was known as Marc of the Millions because of his wonderful tales of travel, and his reputation for wealth resulting from his visit and residence in the court of the great Tartar prince at Peking. The horseshoe form of this archivolt seems to be a reminiscence of the later residence of Polo among the Moslems of Western Asia. Above the archway and beside the square window which ruthless hands have cut in the old brick wall, is inlaid a very curious cross, and adjoining that again is a deeply carved round panel with an incident of animal life.

At Murano near to the church whose beautiful apse has been illustrated above was, not many years ago, that ancient building which was once the Palazzo da Mula. A large archway of entrance flanked by slender columns supporting a string-course from which springs the great arch, formed the central feature of a wall otherwise adorned by simple arcades on the ground floor, with sculptured rondels in the spandrels of the arches. The fragmentary remains which even in the years before 1860 had engaged the attention of those who cared for the delicate work of the *bizantino* period, had wholly disappeared twenty years later. The photograph (Fig. 253) gives the archivolt of the great archway delicately sculptured in marble, a work evidently of the eleventh century, but the hand raised in benediction which fills the central member of the scroll would seem to establish the origin of the sculptured archivolt as being ecclesiastical in some way. Its incrustation into a house-front is emphasized by the rondel which fills one spandrel with its armorial bearings, the corresponding ornament having disappeared long since, and the rough brickwork of the wall patched up to replace it.

253—Entrance of Palazzo da Mula, Murano. (From photo.)

The Venetian dentil is well seen in this picture. It consists of a series of flats alternating with a series of slopes of 45°, the effective shadow and light and shade produced in this way being one of the most vivacious and spirited known to architecture. This moulding and the moulding of the intrados of the large arch are all wrought in fine marble, as is also the later cornice above, but the surfaces of the brick wall have been coated with stucco, nor are there any signs of there having been, at any time, a veneer of marble slabs.

254—Bell tower of SS. Trinità, Verona. (From photo.)

The bell-towers of the eastern cities, those of Venetia and the regions just south of the Alps, are singularly picturesque when seen separately or grouped in a distant view. One of the most beautiful of these campanili,[4] in proportion and in detail, is that of the church of the Trinity (Chiesa di SS. Trinità) at Verona, seen in Fig. 254. It is one of the least lofty in the city, but on that account is more easy to give in an illustration. The very lofty campanile of S. Zeno, with its double belfry, can hardly be appreciated except in connection with the whole group of which it forms a part. The wonderful combination in these Verona groups of what can only be called picturesqueness, with an admirable delicacy of refined detail, is that which has given to Verona its pre-eminence as the most exquisite, if not the richest, of all

[4] Campanile: literally, a bell-tower, or belfry; but used in English to denote the nearly free-standing church towers of Italy. These are nearly square, as at SS. Trinità, Verona; sometimes round, as at Ravenna (for which see Book VII, Chapter V), and occasionally polygonal, as at S. Gottardo, for which see Fig. 255.

the architectural cities of Italy. Its Italian Gothic and its early Renaissance are equally charming, each in its own way, as the pages of Vol. III set forth in further detail.

The towers of Milan are less interesting, but the extraordinary steeple of S. Gottardo, seen in Fig. 255, must be included in every study of the towers of Italy. It is one of the very few successful towers of other than square ground plan. There was, indeed, a childish piece of vanity in the carrying up of those slender marble shafts from the foundation course to the cornice arcade, one on each angle of the octagon, and set free from the wall, the daylight shining between the smooth shaft and the brick tower; but apart from this the tower is worthy of respect, and attains even to an excellent general proportion. The passing from the nearly unbroken shaft to the story of coupled columns below the great belfry, then the belfry itself with its double series of slender shafts carrying round arches, and above this again the preparation for the spire with gradual reduction in the diameter of the tower, are all admirably felt and perfectly well carried out. There is nothing but the rather excessive multiplication of little arcades having no constructional reason whatever and serving the purpose of mere light and shade, to take from the dignity of the tower.

255—Bell tower of S. Gottardo, Milan. (From photo.)

An octagonal tower is used to replace the cupola or lantern at

the crossing of the church shown in Fig. 256. This is the church belonging to the abandoned abbey of Chiaravalle, close to the railroad as you go south from Milan toward Pavia. The design is in itself interesting; the constant diminution in diameter of the successive octagonal towers, their vertical walls carried on carefully considered vaulting below, is in itself well worthy of study; but the special interest which attaches to this work is in its explanation of what was probably in the minds of the builders of other and greater Italian churches. It has been suggested more than once that the famous and beautiful cathedral of Florence, roofed in 1425 by the dome of Brunellesco, was to have been finished by a receding tower like that of Chiaravalle. The great octagon was left unclosed until the classic revival had begun, and then it was too late.

256—Abbey church of Chiaravalle, near Milan in Lombardy, from S.E. (From photo.)

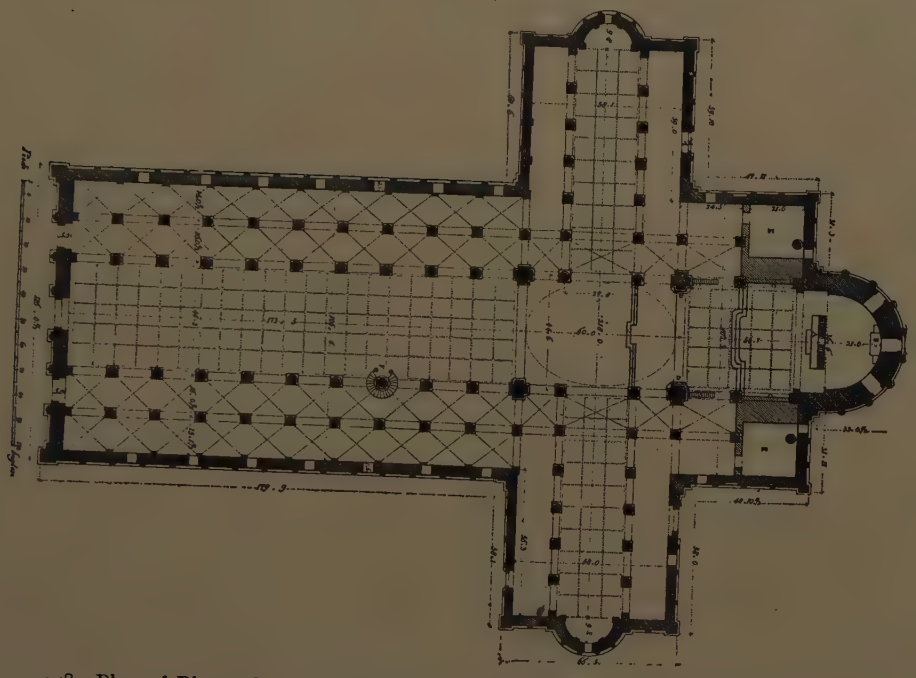
This brief sketch of the Romanesque architecture in the northeast corner of Italy must close with a study of the porch which adorns the west front of the cathedral of Verona. It is one of the great treasures of even this almost unrivalled city of treasures, and in its capacity as a highly wrought piece of ecclesiastical art has been always cared for and continually repaired. It does not, however, seem to have lost its charm. No ruinous restorations have occurred, nor has any rebuilding been recorded. The photograph (Fig. 257) was taken about 1870. The corresponding porch of S. Zenone would be even more characteristic of the earlier type of church porch, but its main features are nearly repeated in this richer composition, which is, because richer, more worthy of careful study—at least in that it contains more elaborate detail. Sculpture, spirited and even grotesque enough in character, has been applied to all its parts with astonishing

freedom. The alternate voussoirs of the great arch, the panels of the horizontal band above it, voussoirs of the upper archivolt, and incrustations of the soffit of the lower vault, are all specimens of the very carefully worked relief sculpture which the Italians of the years from 800 to 1200 or thereabout seem to have kept continually in their list of works easy to produce and constantly produced. It is as if a cityful of decorative sculptors were continually at work producing these designs studied from a very early basilican type of Christian art, which, however, modifies itself slowly as the years pass. Then a more daring flight is taken in those surprising human subjects which fill the two corbel-like projections above the columns of the porch and the similar studies in human gesture and pose which fill the little arched panels in the spandrels. Pure architectural sculpture is found in the capitals and most of all in the very elaborate moulded jambs of the porch within the columns—between them and the doorway.

257—West front of cathedral of Verona. (From photo.)

The celebrated figures of Roland and Oliver, the Paladins of Charlemagne, are carved upon the pilasters behind the columns, one on either side. The one called Roland (Orlando) can be seen on the left in our picture. Animal sculpture as spirited and daring as that of the northern cathedrals, and even more truly architectural, is seen in the griffins which support the columns on either side below and also above. Finally a very interesting sculpture of the Adoration of the Magi fills the tympanum of the great door.

It has been expedient to follow the northern Romanesque of Italy through two centuries, and the same centuries are filled by very extraordinary and beautiful buildings in the heart of Tuscany. The cathedral at Pisa contains in itself an almost complete development of the Central Romanesque. Fig. 258 gives the plan of this church as it stands in modern times, after a restoration in the sixteenth century which was made necessary by the burning of the roofs. It does not appear that serious changes were made in the disposition of the



258—Plan of Pisa cathedral (dimensions given in English feet) (see Figs. 259, 260).

building, nor is the character of the design seriously modified. It is, as the plan shows, much larger than most of the Romanesque churches. In this respect it vies with the great basilicas of Rome; and it is more elaborate than they in having a complete transept made up of aisles and central nave, and ten bays in the length of the great nave; so that a church of 300 feet in length has a spread of transept of 225 feet, both dimensions being reckoned without the projecting apses. Moreover, this is one of the very few southern churches which have two aisles on either side of the nave. The width across the great nave and its aisles is, then, about 116 feet. The above dimensions

are all from out to out, including the thick walls; the interior dimensions may be estimated from the width of the nave between the centre lines of the columns on either side—44 feet 8 inches. The church is, therefore, not of great proportionate dimensions; it is rather a great number of skilfully combined parts from which result the unusual size and grandeur of the building. From that point of view it is truly mediæval. Although the Pisans undertook to build a church of unexampled dignity and cost, they did not increase the scale of their building, but multiplied its parts. To do all this and to keep all the parts well in hand, maintaining grace and charm of proportion in complexity, was the pride of the mediæval designers, as it was of those of the classic styles.

The church must have been begun early in the eleventh century, but from 1063 on the undertaking was looked at more seriously, and apparently the whole scale of the church was changed at that time. A piece of foundation wall discovered under the nave floor in the third bay from the west front seems to indicate a lengthening of the nave by 50 feet. The façade, therefore, in whatever form it may have been begun or planned, was started anew at that time. It is common to speak of the famous victory of the Pisan fleet over the Saracens in 1063 and the subsequent capture and sack of Palermo, as the impelling motive in this new scheme of expenditure and splendid building; but the wealth brought to Pisa by her wide commerce is a sufficient explanation of such outlay on the part of an enterprising and public-spirited body of citizens.

Fig. 259 shows the crossing, marked by a very wide and high arch seen on either side, and the great nave from the east. The great arch on each side is flanked by the small arches which denote the aisles of the transept. The lofty pilasters which seem to include and frame these triple arcades, carry the great transverse arches of the crossing. That crossing, then, affords a clear space inside of all walls and other supports, of about 42 feet north and south by 58 feet east and west, and that oblong space is roofed by a cupola of oval plan. This remarkable peculiarity, the non-circular form of the dome, is hardly noticed within, for the cupola is of but little effect from the church floor, and cannot be seen from the galleries. From without it is only noticeable when one compares the view from the flank with the view from the east or from the west, and this for the reason that the cupola is not of first-rate importance in this church. It is but a small feature

259—Interior of Pisa cathedral, looking toward west front (see Figs. 258, 260). (From photo.)

as compared with the mass of the building itself, or even as compared with the façade. It does not appear that any very marked purpose was served by this peculiarity. It seems to have been a natural way of roofing an oblong space, which space again results naturally from the form of the crossing in which the great nave alone intersects the nave and aisle of the transepts. Had the builder dared, he would have preferred, we may think, to have taken the great approximate square of 75 feet by 68 feet which would have resulted from the including of the inner nave aisles as well as the transept aisles, and have been at once more central and more impressive. Over this space he could easily have built a dome of circular plan, but it would have been large, and so great a cupola would hardly have appealed to the Romanesque builders. It might have resulted from a close study of a Byzantine example, but that is not what the builders had in mind. They were Italian builders with Western traditions and proclivities, and not too closely allied with the Eastern empire.

Returning to the details of the interior, it is safe to assert that the noticeable bands of dark gray which alternate with the white marble are made stronger in tone than the early builders would have chosen. The photograph (Fig. 259) shows the building as it has been since 1890, and after very considerable repair and the giving of a new look to its parts. As the bands now are, the sharp contrast of dark gray with yellowish-white interferes with the delicate light and shade of the capitals and greatly diminishes the value of the painting, which also is limited now to the panelled ceiling. In addition to these probable changes in effect, caused by such modern lack of sensitive feeling for colour and light and shade, we have to take away from the church, in order to restore in spirit its intended effect, the huge door-piece of Italian sixteenth-century architecture, the two tabernacles which flank that door-piece, and, at the extreme eastern end not seen in Fig. 259, all that fantastic ornamentation with coats-of-arms and supports with which the arches above the apse are invested. There is even a canopy with curtains hung high above the altar, adding nothing to the dignity of the altar itself and greatly marring the beauty of the vaulting; but this piece of upholstery may well have disappeared before the twentieth century came in. Such disfigurements, fortunately, are temporary.

The exterior of Pisa cathedral is fortunate in the close association with it of other ecclesiastical buildings. Directly opposite its west

260—Pisa cathedral; exterior. (From the south-west.)

front, and on the same axis, stands the wonderful baptistery, a round building of much earlier date, but adorned and partly rebuilt in the Italian Gothic taste, with details of the thirteenth and fourteenth centuries. This building is not seen in the plate (Fig. 260). The comparatively low wall crowned by a cupola and seen on the left is part of the famous Campo Santo, which, however, contains no details of the Romanesque period. The campanile is seen on the extreme right. This is the celebrated leaning tower, a building which, if it had not that peculiarity of an unusually great inclination, even among buildings on record as out of plumb, would not be considered a very important work of art. The constant succession of stories almost exactly equal in height and in treatment, although not deserving too harsh a criticism, is by no means the happiest thought that might have occurred to the designer of a tower one hundred and eighty feet high and standing free, without any restrictions tending to modify its purely monumental conception. The tower has no roof above the eighth story, but at the top of the seventh story a flat cupola covers it, through which cupola is carried an oculus nearly seven feet in diameter. The tower is a carefully built cylinder with walls twelve feet thick where they rise above the level of the pavement, and divided into stories only in its exterior; for the interior is a continuous, smooth marble shaft, as even and unbroken as the bore of a gun. The bells, then, are hung in the round-arched openings of the eighth story—in the thickness of the heavy wall, and swinging as freely as those in the bell gable of a village church. It is only fair to say that the monotonous succession of equal stories is suggested by the neighbourhood of the arcading in the west front and also around the apse, of the cathedral. The proportion, moreover, between the six arcaded stories taken together, the more massive basement and the smaller and open belfry at top, is fortunate enough. What the arcading lacks is proportion *within itself*, the play of different dimensions and different disposition among the six stories which compose it. The façade of the cathedral, on the other hand, as seen in Fig. 260, is of great and celebrated beauty, although here, too, the effort of the designer has been to make his stories nearly uniform in height. The other conditions are different, however. Above the great portals there is one long arcade containing nineteen arches, of which the middle one is a little the largest. Upon this arcade there rises that which is partly an arcade, and partly a colonnade whose dwarfed pillars carry the raking

cornice-band of the aisle roofs; and in this way the approximate equality of size in the different parts disappears completely. This third story of the front is crowned by the west wall of the clearstory, and here again the differences of scale are but slight, between the arcade and its superstructure in this fourth story and that of the story below. Slight is the difference in height, but it was a sagacious choice that made that story a little higher, even as it became narrower or shorter from north to south. The result of this double change of scale is that the arcade of eight arches seems much lighter and more fanciful than the longer stretch of columns below. Then, as the columns no longer come directly above those of the story below, eight bays corresponding to nine—the boldness of the thought and its realization becomes almost equal to that seen in the Lucca fronts (Figs. 262 and 263). The Pisa façade finishes with another arcade of eight bays in the gable, but the rake of the cornice crowds the eight bays into smaller space horizontally, and still another note of diversity and liveliness of design is introduced.

The great advantage which the Pisa church has over the two beautiful buildings at Lucca is in the more completely organized design—a west front which is really the enclosing wall of the church, on that side, and not a separately designed frontispiece. The cathedral is singularly fortunate in the grouping of the four buildings named above about a lonely square, in the extreme north-west corner of the city, and just within the ancient walls. As you enter the city by the high road from the north, you pass through the Porta Nuova and at once come upon the view given in our Fig. 260. Nothing, even in Italy, is more exquisite.

The cathedral of Pisa exhibits, to a remarkable degree, examples of optical illusion brought about by irregularities in design, such as have been considered in connection with the Doric buildings (Book III, Chapter IV). Careful surveys have shown these architectural refinements to exist in many of the more important mediæval buildings of Italy, and they are well exemplified in this church. Thus Professor William Henry Goodyear has shown, among other such refinements, that, in this cathedral, the string courses of the galleries are curved horizontally in the length of the nave, and are also made to pitch downward some two feet from front to rear, while the nave floor slopes in like manner, but to a less degree, the convergence of these apparently horizontal lines producing a more pronounced per-

spective, giving a seemingly greater length to the nave. In like manner, the corresponding lines of the transept converge inwardly toward the crossing. More remarkable is the construction of the western façade which is made to overhang, the first and second stories having each an outward projection beyond its own base; the first of nearly a

261—S. Miniato near Florence: nave, looking east. (From photo.)

foot, the second of some five inches, thus overcoming, it is believed, the appearance of an inward batter which would have obtained had the walls been built plumb.

On the hill-side, south of Florence, is a famous conventual church, whose façade, of later and less pure style, dominates the Arno valley, while its admirable interior affords the best example we have of the

developed and aggrandised basilica—the basilica of an advanced epoch. The church of S. Miniato al Monte has a plan very similar to that of S. Ambrogio at Milan and S. Zeno at Verona; that is to say, this church is divided into three great bays, each bay of the nave corresponding to three smaller bays of the aisles. No photograph that can be found shows enough of the interior to explain its whole scheme, but Fig. 261 shows fairly well the effect of the eastern half of the church in spite of recent decoration and attempted restoration. One of the characteristic features of the church is the double choir, of which the lower and western part is raised by sixteen steps above the pavement of the nave, while the inner sanctuary is on a still higher level. The beautiful pulpit shown on the right of this upper choir, the canopied altar in the foreground, and all the vertical faces of wall and parapet connected with these elevated parts of the church, are of later date, even of the classical Renaissance of the fifteenth century, but the good taste and refinement of their inlaid and carved decorations keep them well in place, and it is not they which mar the delicate charm of the interior. Its one defect is the too decided contrast of patterns in the marble inlay: but this is high on the clearstory walls, and above the numerous and splendid tombs which line the outer walls of the aisles.

The Romanesque of Lucca is almost completely expressed in the wonderful church of S. Michael the Archangel (S. Michele Arcangelo). This church, as shown in the photograph (Fig. 262), has been very carefully restored, and its new and complete look contrasts with the weather-worn appearance of many of our examples. The student can only regret the replacing of shattered sculptures by new copies, of the ancient carved or inlaid shafts by new ones more or less carefully studied from the originals, or the filling of gaps in the inlaid pattern by conjectural designs made according to the nineteenth century architect's notion of what the twelfth century architect had in mind. It is evident that the work done upon S. Michele was done in the most careful and conscientious fashion, and yet there is no modern man who is wholly competent to think for a mediæval artist to the extent of piecing out his work. On this account we have only the general scheme of S. Michele to consider. The flank of the church is designed as consisting of a lower arcade closely corresponding in height and function with the nave arcades within; and the upper arcade repeating the gallery of the interior. In the design of the flank nothing else has

262—West front of S. Michele, Lucca. (From photo.)

been considered important. Covering and concealing the division into higher nave and lower aisles, the façade of the church has been added to this as if the artist had quite determined upon the ultimate construction of a church whose interior would reveal almost northern feeling in the proportion of height to width, and was ready to build up the side walls and the new roofs to correspond. So the front has stood for seven hundred years, nor has any one ever undertaken seriously the adjustment of the church proper to this grandiose façade.

Nothing is finer in the Romanesque style than the proportion between the arcades of these different stories of the front. The seven arches on the ground story carry an arcade of fourteen arches in the second story, and that number is repeated above; but the fact that the central archway of the ground story is broader than the others throws all these columns out of centre, leaves them no longer *en axe*, as a classical designer would say; and thus produces the effect which is at once so admirable and so truly mediæval, the effect of uneven bearing. The piece of walling above the arcade of the ground story is assumed to be a solid and continuous stylobate, and capable of carrying almost any distribution of weight in the story above, and accordingly the upper story is designed with only an artistic sense of reference to the arches below. It is not to be forgotten or ignored—this deliberate choice of the mediæval men—their decision to replace the classical columniation by a radically different system, a method of design in which a harmonious result is obtained by contrast or by change, in the place of uniformity. The decoration of the wall surfaces, by means of an inlay of black background upon which the patterns are relieved in white, is not wholly acceptable to a modern student, because the smooth surfaces do not seem to be sufficient to allow of such a decoration. Such a picture gallery, shown in Ruskin's drawings of this front, made about 1840 and published in the Seven Lamps of Architecture and in the first volume of The Stones of Venice, or in our photograph which shows the redistribution of this in 1868–70, is repulsive in a way, whenever the student demands a certain amount of smooth and unbroken surface to set off the descriptive and representative adornment. The student is excusable who wishes for a more massive and unbroken walling above the arches of those elaborate arcades.

The duomo of Lucca, dedicated to S. Martino, is in part of the thirteenth century or developed Gothic period, but its whole frontis-

piece, including the return wall for 15 feet of depth, is complete central Italian Romanesque, and is probably the finest example which we have of that admirable style. The peculiarity which we found in the church of S. Michele is carried further in the cathedral (Fig. 263), for here a triple arcade below is crowned by arcades of fourteen arches in the stories above, and moreover the triple arcade itself is centred on the

263—West front of cathedral of Lucca. (From photo.)

interior lines of the church with perfect indifference to the irregularity caused thereby, when the front had to be shortened on the south side by the interposition of the huge belfry tower. It has not troubled the great and daring architect of that front, Guidetto, to so combine his largest arch in the middle, his almost equally large arch on the left, and his much smaller arch on the right, into a beautiful group. In like manner he has not hesitated to put a column more nearly in the centre of his middle arch, than a bay or arch of the upper arcade. On

the other hand he has not cared to get an opening exactly above the middle opening of the lower story. In short, he has put his row of fourteen arches in between the walls of the great tower and the north corner of his façade without any fear of consequences. With equal intelligence he has known how to set his low clearstory-wall upon the broader front which supports it: and has made the overwhelming mass of the bell-tower serve to formalize and rectify the rather loose and off-hand grouping of his arcade. The tower, indeed, has lost its early character of a steeple: and we do not know whether Maestro Guidetto built the battlements which now crown it.

The high-wrought designs of the churches described above, still existing at Verona in the far northeast, at Pisa and Lucca in Tuscany, and that on the hill-side above Florence, are all of a period whose limits are about 1030–1090. Traces of earlier work and alterations of a later style appear; but the design remains and can be judged in each case. Moreover, we can judge by means of them the developed Romanesque of Italy; especially as seen in the interior design, based upon the basilica plan, but much elaborated and refined. The impressive charm of the great naves is only matched by the delight which the churches are capable of giving to those who will explore crypt and cloister, and study minute details of sculpture. It is only at Pisa that the exterior exists in approximate perfection; for elsewhere it is impossible to be sure of the purpose of any one designer. The works of succeeding epochs on front and flank and apse have not been so often superadded one to another, as crowded, one after another, into the original design. It is probable, moreover, that this Italian Romanesque has always been a mixture of eastern and western influences acting upon a mixed race of Italians of aboriginal stock, with Romans, Lombards and Ostrogoths; and was really as tentative and immature in character as its existing remains present it to us.

There is, as we have seen, a strong and easily traceable Venetian spirit; there is a magnificent Tuscan Romanesque; there is the making of a grave and stately style in Lombardy; but not one of these has reached final maturity. We have many buildings, unsurpassed in varied and undisciplined charm; buildings as attractive as the great cathedrals, although not of equal artistic importance. In Liguria, near Genoa, is the admirable basilica of Andora; severe, cold, almost unadorned, built of squared stone with three apses pierced with narrow slits for its only windows. Near at hand, at Lavagna, is the church

of S. Salvatore, rebuilt, except its beautiful tower, with double belfry, stone pyramidal spire and pinnacles. Farther north, and near Alessandria, is Casale with its abbey of S. Evasio, now used as the cathedral; full of spirited and unusual sculptured detail, though much decayed and partly reworked; at the distance of a short ride is Asti, with its admirable and unaltered church of S. Nazario, beautiful in tranquil neglect, with a noble square tower and simple details of sculptured

264—Abbey of Vezzolano near Asti: cloister. (From photo.)

archivolt and capitals; and also the radiate church of S. Pietro. The suburbs of Asti are rich in spirited Romanesque; the church of S. Secondo, small and plain, but having admirable capitals in the nave arcade, the Abbey of Vezzolano, with a church much modified and modernized, but retaining its admirable cloister (see Fig. 264). All the above-named are in the plain of Piedmont; but if we go northward into the hill country, and search at Aosta and the less-known towns of that vicinity, or along the Lake of Como at places where the steamboat does not stop, we shall find Romanesque art in unaltered abundance.

265—Aosta: Tower of S. Orso. (From photo.)

Of the ancient monastery of S. Orso, at Aosta, the admirable tower, with four stories of belfry-chambers, and crowned by a stone pyramid, dominates the cloister, as shown in Fig. 265. Nor are richer and more costly monuments wanting, among the foot-hills of the high Alps.

And yet we are not to look in North Italy for the traces of a perfected style during the eleventh and twelfth centuries. The buildings of the far south may have presented, during the twelfth century, the aspect of a matured Romanesque style; less purely Italian than that of the centre and the northern provinces, because of the strong influence of the Norman invaders. It is evident, however, that this was soon overborne, its very existence rendered doubtful by the invasion of the Gothic vaulting and its resulting details, coming directly with

the Angevin conquerors from the very centre of the Gothic movement in north-western Europe. We have traces of that southern Romanesque with pointed arches in the church of S. Nicolà at Girgenti in Sicily; where the aisles are roofed by a succession of vaults sprung from cross-walls, and abutting one another in the direction of the length of the church; and the nave is spanned by a tunnel-vault of pointed section, abutted by the stone roofs of the aisles. All this is closely similar to the system of the abbey-church of S. Remi, Rheims, explained in Chapter II. That church is but one of many simple monuments which have been little studied. The rich detail of Troia cathedral, between Naples and Foggia, on the high road to Brindisi and the East; the reminiscences of Pisa which the cathedral offers at Trani, on the Adriatic coast; the severity of Ruvo cathedral, stern and cold in despite of its rich sculpture—all mark a period of Romanesque art nearly contemporaneous with the early complete Gothic of France; and the vigorous details of domestic buildings, left recognizable at Trapani after eight hundred years, commemorate a Norman occupation which just missed being as permanent as that other settlement in north-western Gaul, the settlement which bears the special name of Normandy.

What the more undisturbed Italian feeling might have produced is partly seen in the façade of S. Pietro, at Toscanella, in Latium, and near the town of Viterbo. The photograph (Fig. 266) shows marble columns, marble tracery, and mosaic bands, all hopelessly ruined by restoration. That this sculptured decoration may be better understood, Fig. 267 is given: the details of the sister church, S. Maria Maggiore. The rich side doors are built up: and of these at least the sculptures are unaltered. The general disposition of the front is wholly constructional, resulting in a west end strictly corresponding with plan and interior (see Fig. 92), and completing the design of flanks and apse. The real superiority of such a scheme to the ambitious façades of Lucca and to the later Gothic fronts shown in Vol. III, needs not to be demonstrated. Such a tendency as is seen here, could it have controlled central Italian art, would have given the peninsula what it was not destined to produce—a consistent national style.

It is a Gothic invasion which checked the development of the Italian Romanesque. As early as 1187, almost at the same time that the façades of the two wonderful churches at Lucca were put in hand, the

church at Fossanuova in the modern province of Latium was begun. This monastery is near the little town of Piperno which, itself far from the railroad or any great line of communication, is dangerously near to the Pontine marshes, though it stands on the hill-side high enough to be saved from the worst dangers of the site. The church of the monastery has pointed arches in the nave arcade and spanning the aisles; moreover the vaulting shafts of the high vault are secured to the heavy piers which back them up by annulets of stone in the north-

266—Toscanella: west front of S. Pietro. (From photo.)

ern fashion, but it does not appear that the vaults were completed during the early period of the church's existence. The refectory also is built with pointed arches of great span, each carrying a piece of wall which supports the timbers of the roof. The windows of this very beautiful room are pure Romanesque of a good period, somewhat northern in style. The great infirmary or hospital room is also spanned by pointed arches; and this has been undoubtedly like the refectory house in its construction, but the wooden roof has wholly disappeared. The chapter-house alone is completely vaulted, and of fully developed style as of a Gothic belonging to a later period. All the earlier build-

267—Toscanella: west front of S. Maria Maggiore. (From photo.)

ings, church, chapter-house, infirmary, refectory, give the impression of a careful study in the use of the pointed arch in Romanesque building; and this by monks of the old Cistercian abbey—men who were in close communication with their brethren of the North, especially of eastern France and the towns on the Rhine, feeling their way toward Gothic building. We find a similar use of the pointed arch in English abbeys, where again it is associated with an architecture not Gothic in any strict sense.

A recent writer, the author of an important work on the origins of the round-arched architecture of Italy [5] points to several instances of Gothic construction to be found and traced in the churches of S. Flaviano at Montefiascone, in the cathedral of Aversa, and in the church of Rivolta d'Adda, near Milan, in Lombardy. Moreover, this author gives the second half of the eleventh century as the epoch for each of these pieces of vaulting—a vaulting which unquestionably shows that the great principle of Gothic construction was known to the builders of the masonry in question. On the other hand, there is no appearance of a decorative or architectural result as having followed from these elaborate rib-vaults. Moreover, the very claim for so early a date, as set up by the Italian writer whom we have quoted, is almost destructive to any theory which might be built upon the existence of these vaults in Italy. When the Gothic ribbed vaulting took shape in the north-west of Europe, it resulted immediately in what we know as the Gothic style, as explained in the third volume. To suppose that the vaults above named were built with ribs before the close of the eleventh century, when no Gothic design was to follow them for at least eighty years, and then with apparent relations, very close and unmistakable, to the architecture of middle and western France, is to claim more than we are at present capable even of considering gravely. For the present, at least, the student of existing epochs in mediæval architecture is compelled to believe that this church of Fossanuova was an attempt to modify the Italian Romanesque by the example of the half-understood northern style. The church of S. Galgano, south-west of Siena, in Tuscany, though in ruins, is seen to have felt the influence of Gothic in design; it is also apparently later by forty years. The remarkable church of Santa Maria d'Arbona, near the Adriatic sea-coast and close to the town of Chieti, is another instance of a conventual building, the work of Cistercian

[5] G. T. Rivoira, Origini della Architettura Lombarda, Vol. II, Rome, 1907.

monks. But here is found a very boldly vaulted crossing, with huge ribs and a central key having a huge oculus pierced through its middle. A church near Viterbo, a city northerly of Rome, has also ribbed vaults. The frequent use of this particular detail reminds one of the mihrab cupola of the mosque at Cordova; for which see Book VIII, and especially Fig. 207.

For this whole matter of vaulting by ribs the reader is referred to Gothic building given in Volume III. The whole system of Romanesque vaulting was destined to lead up to rib-vaulting as the only satisfactory solution of many questions: but the complete triumph of that system, and the creation of a great and controlling architectural style was left for the people of North-western Europe.

Ambo from church of S. Basilio at Troia (Apulia), Italy; now in Cathedral (S. Maria Assunta) of same town. 1169. (From photo.)

CHAPTER II

LATER ROMANESQUE OF FRANCE

THE country now known as France is represented by the outline map, Fig. 268, whose divisions number from 1 to 12, representing ancient provinces and districts of the country. If we speak of France in the tenth century, the term can only be used to signify approximately that district which is No. 1 on the map, of which Paris was the political centre, except when Laon, north-east of Paris and not far from the town of S. Quentin, was the residence of the king. The king might easily have great influence beyond the boundaries of that district; by marriage or by other formal alliances he controlled at various times the central southern district (8), all the country on the Mediterranean (10); and the Dukes of Normandy (3), those of Brittany (5), and the princes governing large parts of the sea-coast country (7, 11, 12), were all in a sense subject to him. And yet his authority would not always suffice to guard him and his estates from the dangers of war with some of his great vassals; and there were occasions when the Duke of Normandy was more powerful in arms than the king could pretend to be. The province of Anjou (part of our district 7) was the home and the centre of power and influence of the Angevin kings, viz., those sovereigns whom we know as Henry II of England and his sons Richard and John. The empire of those princes, including, as it did, practically the whole of England, parts of southern Scotland, Wales, to a limited degree Ireland, and on the continent all the region from Rouen on the north to the Pyrenees, including our districts 3, 7, 11 and 12, was much more extensive, wealthy, and, in a military sense, powerful, than that of the King of Paris at the same time. The south-eastern regions, including Avignon and Arles, Toulouse, and Albi, were not united to the crown of France until much later times than those which concern us in the present chapter. The

eastern regions of Burgundy (9), Champagne (4) and Lorraine, can hardly be said to have owed any allegiance to the King of France, and the Dukes of Burgundy were, even as late as the fifteenth century, formidable enemies of the king, threatening even to form the nucleus

268—France: Approximate boundaries of the several styles of architecture in the Middle Ages. 1. France proper, or Royal France. 2. Rhenish. 3. Norman. 4. Champagne. 5. Brittany. 6. Dauphiné. 7. Poitevin. 8. Auvergne. 9. Burgundian. 10. South: Languedoc and Provence. 11. Périgord. 12. Gascony and Guienne.

of a central state more powerful than France on the west and the German empire on the east: "a central state of Burgundy" which some writers of the nineteenth century have regretted as lacking to the equilibrium of Europe.

In the eleventh century, the Romanesque architecture of these dis-

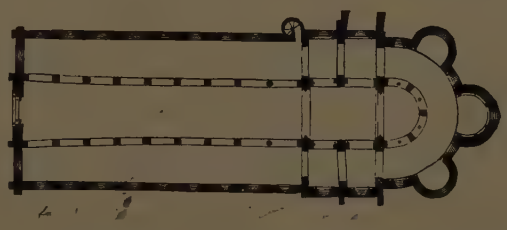
tricts was singularly varied. Normandy (3) on the north-west, Poitou (7) and Périgord (11) in the west, Auvergne (8) in the southern centre of the country, all differed in their prevailing styles of church architecture from what may be called the central style of the kingdom of Paris. These styles, again, were controlled chiefly by the monks of the great Orders: that of Cluny—a branch of the Benedictine Order, which controlled, it is said, two thousand monasteries, possessed enormous wealth, and cared greatly for architecture—occupying the heart of the country with their splendid establishments. The powerful Order of the Cistercians, founded at the close of the eleventh century, was not at first friendly to architectural display, but at a later period, when the earliest Gothic architecture was taking shape, the Cistercians were great builders in Burgundy and along the eastern frontier, and their edifices were, as we found in Chapter I, copied and repeated in northern and central Italy. The influence of the Normans was, on the other hand, rather less monastic. Wherever the Norman fleets landed, in southern Italy, in Sicily, in England, and even in the East under the disguise of the crusading fervor, their war-like masters built castles and churches with equal enthusiasm and always with energetic disregard of the ancient tendencies of the land in which they found themselves.

In Périgord (11) on the south-west, there are found examples of a strange architecture with cupolas, whose origin has been greatly disputed. These churches are as different as possible, in their general aspect, from the other Romanesque and the Gothic churches of Europe; for with most of these the rule is that the vault is expected to be exposed internally only, and needs to be protected by wooden roofs covered with lead or tile; while in the country represented by the modern *départements* of Gironde and Dordogne, and thereabout, are found churches whose homogeneous roofs, rising in cupolas above the crossings, sanctuaries and porches, are exposed to the weather as freely as the domes of the Byzantine Empire. Late in the Romanesque epoch, the pointed arch was introduced in the centre and in the east; but without other tendencies towards the style which we know as Gothic. The vaults remained solid, uniform masses without ribs; it is merely that they are made stronger, more resistant, less liable to collapse by giving them greater height with the same base and finishing them at top with an angular, instead of a rounded, closing.

From the present chapter we exclude the Norman and Rhenish

architecture, which must be treated, each by itself, in Chapters III and IV. The architecture of middle and southern France is our immediate theme, and the extraordinary variety even of that limited region makes classification extremely difficult. For the purpose of this analysis we may consider the architecture of these parts of the country as divided into five schools: those of Périgord, Poitou, Auvergne, Burgundy, and the southern district corresponding roughly to Languedoc and Provence; these being the districts in which were developed, side by side, distinct types of building resulting from the various methods adopted to solve the problem of vaulting: to replace with stone the inflammable and easily destroyed wooden roof of the Latin basilica. It will be seen, however, that these types were far from being restricted to the districts in which they originated or were chiefly developed; that, indeed, the influence of either school is often seen in buildings considerably beyond its approximate boundaries as given in the map, Fig. 268. The architecture of the country, outside of the seven districts mentioned above, was chiefly the result of influences from those districts; and showed but little originality of its own until the development of Gothic, which is treated in the third volume.

Of the period from Roman times to about the end of the eleventh century, there are but few architectural remains except the churches. These were basilicas similar to those of the Latin and earlier Romanesque which have been considered in Book VII and in the preceding chapter; having three aisles, a clearstory, and wooden roofs. Such vaulting as they may have had was limited to the apse and the lower stories of the towers. The most complete building of this period is the church at Vignory (Haute-Marne) which dates from the end of the tenth century, and which has been carefully repaired by the government under the direction of Mr. Boeswilwald. There is every reason to believe that the work of restoration has been conscientiously done and that the church as shown in Figs. 269 and 270 is substantially as it stood in the tenth century or in the earliest years of the eleventh. The deambulatory is roofed with an annular barrel-vault, enclosing a



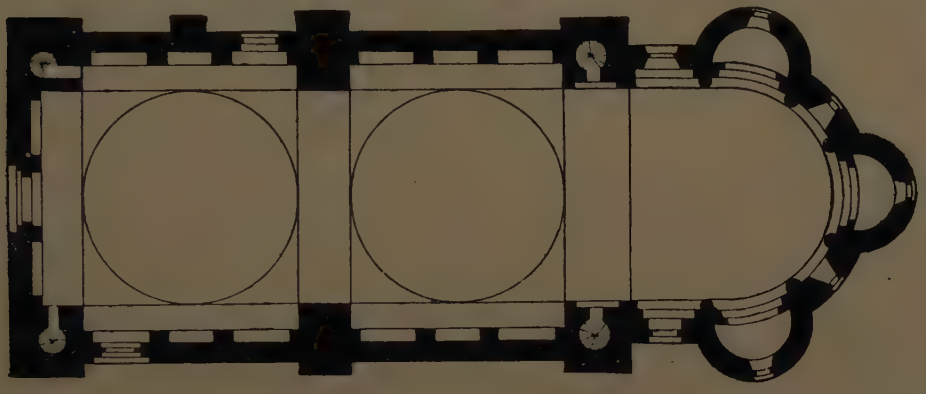
269—Vignory (Haute-Marne): plan of church of the tenth century. Total length with chapel about 170 feet. (From Eu. A.)

half dome over the semicircular sanctuary. Next to these, towards the west, are two square bays on each side, which seem to answer as transepts, and which are also barrel-vaulted. Over these rose two towers, of which one only remains. The rest of the church, nave and aisles, has wooden roofs on trusses which may be seen in the illustration of the interior. The windows below the clearstory seem to be a reminiscence of the triforium, but the story which one expects to find behind them, over the aisle, has been omitted. The windows then serve no purpose except to relieve the wall of so much weight, unless indeed they may be considered as admitting some light indirectly to the upper part of the aisle.

270—Vignory (Haute-Marne): nave, looking east. The wooden roof-trusses can be distinguished overhead (see Fig. 269). (From photo.)

At Cahors (Lot), on the River Lot and nearly east of Bordeaux, is a church which has no aisles, no narthex, and only two bays in its nave. This is, perhaps, the smallest cathedral church in Europe except the old cathedral of Athens. The plan, given in Fig. 271, is that of the church as originally built. The exterior as seen from the south-west is shown in Fig. 272. The cylindrical drums, which have been completely refaced, are external only. Within, the nearly hemispherical cupolas rise directly from the pendentives which form the transition from the square bays to the circular bays of the dome, in a completely oriental manner; and the circle, once reached at the top of these pendentives, is indicated on the outside by the stone-faced drums which rise above the roof. The purpose of the vertical walls is, then, to make the

outer curve of the cupola flatter than that of the interior, all this with the single purpose of making the shell of the dome thick enough at the haunches to resist the horizontal thrust. The western frontispiece seen in the left in Fig. 272 was almost entirely built in the fourteenth century, being added to the length of the church; but the nave and choir are nearly intact and the structural character of this part of the building is unchanged. The original Romanesque decorations can also be judged by those who might pass round to the northern flank of the little church and examine the doorway and porch on that side. The photograph, Fig. 273, shows this ancient portal as it stood after the street had been raised to a higher level, compelling the closing of the doors; the picture is one of those taken at the orders of the Commission



271—Cahors Cathedral: plan. (From Dehio & Bezold.)

of Historical Monuments, about 1875, and before the recent renovations. Later photographs of the tympanum above these doors show that the sculpture at least has not been recut, but the general aspect of the portal has been much changed by what were then the necessary alterations in those parts more than in the way of injury.

In the department of Charente there are a number of small churches roofed with cupolas. One of these, at the little village of Roullet, has its nave roofed by three round cupolas springing from pendentives, and the ancient choir roofed by what seems to have been meant for a high tower but stops now at an octagon rising above four groups of heavy arches. This octagon is covered, perhaps as a makeshift, with a cupola not unlike those of the nave. Beyond this, to the east, is the long sanctuary of four bays, but this is evidently an afterthought, not to be included in our studies of the original church. The interior of

this church of Roullet is seen in Fig. 274, taken from the rough but accurate drawing in the Sharpe memorial book.[7]

Of all these domed churches much the most important is the cathedral of Angoulême, of which the plan is given in Fig. 275. Three

272—Cahors Cathedral, from south-west. (From photo.)

circular cupolas roof the nave, which is, like most of the churches of the district, without aisles of any kind and with only a shallow and unimportant narthex. Each arm of the transept is roofed with a wagon

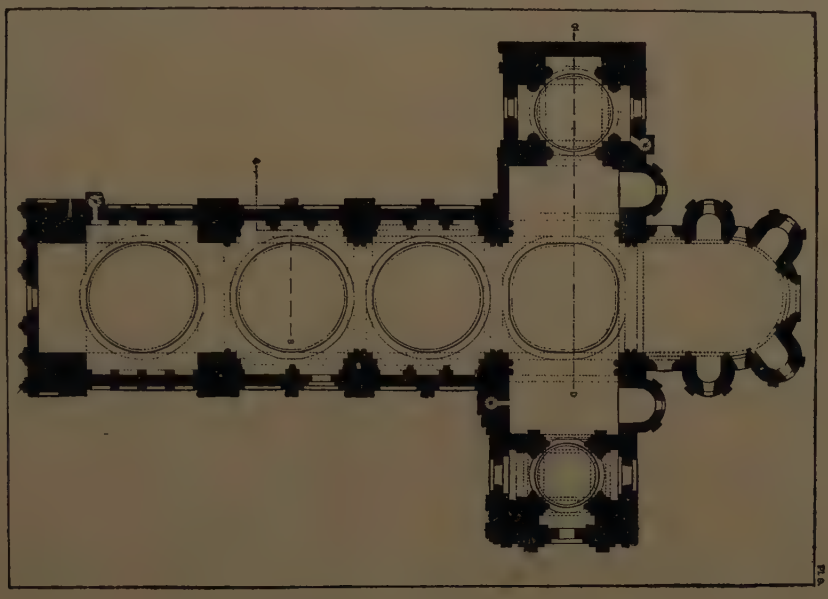
[7] A Visit to the Domed Churches of Charente, France, by the Architectural Association of London, in the year 1875. - Published as a memorial to Edmund Sharpe.

vault for part of its length, and a small round cupola beyond. At the crossing is a cupola with curiously abated or diminished curvature on the four sides, and beyond this to the east is a choir of more normal character with small, shallow chapels. The west front of this church is shown in Fig. 276, as it stood before the restorations undertaken by Paul Abadie, who died in 1868. The workmen are seen engaged upon the great portal. As yet no restoration has been undertaken on the upper parts of the front. The temporary roof with the two dwarf towers covering the winding staircases which are not shown in the plan because they start from a higher level, are all the result of the contemporary repairs carried out after the religious wars of the sixteenth century; for the church had suffered from attacks by the Protestant armies upon this stronghold of Roman Catholicism. The significance of such elaborate sculptures will sometimes escape the student's closest investigation, because the legends of the church are often represented in eleventh century work in ways hardly recognizable. Much of this sculpture is intelligible enough, and the manner in which the artist expected it to be seen as detached designs on a general broad field of gray stone, but everywhere framed in, individualized by the architectural adornments, is well worthy of minute study. It is seen at once that here is a way of adorning a west front which is free from the charge which we bring against the Italian churches with their lofty frontals. Here there is no contradiction of the true composition of the

273—Cahors Cathedral: north door. (From photo.)

274—Roullet: church: nave, looking toward west doorway. (From Sharpe.)

edifice; but, as the flanks of the church are encumbered with low roofs as of chapels and service apartments, and as the bishop's garden and such other enclosures as may be needed, are always in the way of perfect observation at those points, the west front, where are the principal doorways, is left as a broad page to be constantly read and studied by the people. Fig. 277 shows the front as it now stands, the sculpture having been largely remade, new groups having been cut from reminiscences or from documents recording the ancient adornments,



275—Angoulême Cathedral: plan. (From Sharpe.)

as seen especially immediately above the side doorways in the S. Martin on the right and the S. George on the left. So far the restoration is ruinous and nothing else. We can only rejoice at the preservation of some record of what those sculptures were originally; and the completion of the front by the tower tops with their scale pattern on the roofs and the pinnacles, and more especially the completion of the gable above the great central archway, can only be accepted as the nearest approach to the original design which the nineteenth century was capable of. Probably we see the church in this restored front very nearly as it was intended to be; exception being made for the true forms of ancient sculpture, which cannot be grasped nor reproduced with any safety by the men of modern times.

This domical architecture was not destined to have much of a following, undoubtedly due to the difficulties of construction, and soon after the beginning of the eleventh century we find the districts of

276—Angoulême Cathedral: west front before restoration. (From photo.)

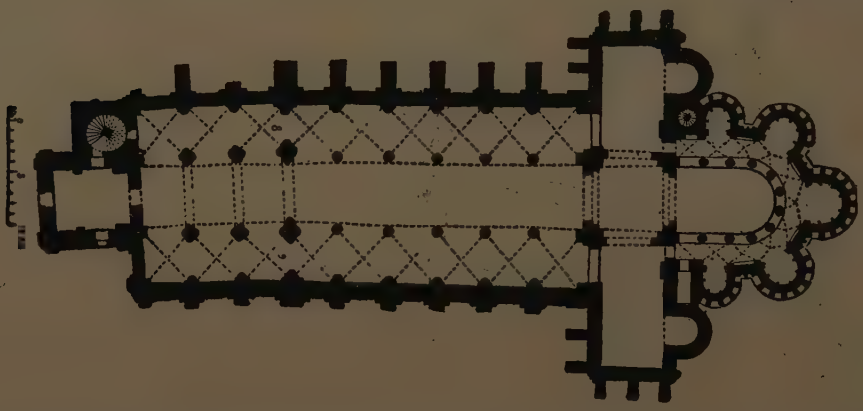
Poitou and Auvergne undertaking the vaulting of the naves on very different lines, while still adhering closely to the plan of the Roman basilica of three aisles. The problem which these builders set them-

277—Angoulême Cathedral: west front after restoration. (From photo.)

selves was, then, to substitute for the three wooden roofs of the basilica, a system of dressed stone vaulting. This was a comparatively simple matter where the narrow side aisles were concerned, as is shown in

many examples of the previous century of churches in which the side aisles are closed with square groined vaults of an entirely Roman type, while the central naves retain their wooden roofs.

Probably the earliest existing example of the continuous vault over the central nave is in S. Savin near Poitiers, dating from 1023, of which the plan and cross section are given in Figs. 278 and 279. It will be seen that, in the plan, the basilica type has been closely followed, but that vaults have been substituted for the wooden roofs. The square bays of the aisles are closed with groined vaults in the Roman manner, and these are so disposed that they abut against the continuous barrel-vault of the nave, maintaining it by their resistance to the horizontal



278—S. Savin (Vienne): plan of church built about 1023, and one of the earliest examples of a completely vaulted church. Total length outside about 257 feet. (From D. and B.)

thrusts. To bring about this arrangement, the aisles are raised nearly to the height of the nave. And herein is seen a serious defect in the designs of this type: there is no clearstory—no direct light for the central nave; the builders of these early vaults, fearing for the safety of the main vault if carried clear above the aisles, and seeking to resist its thrust, have so proportioned the relative height that the masonry of the lower vaults rises quite up to the springing of the central cradle; and these three compartments, of nearly equal height, are then roofed with one continuous peaked roof. The only light, then, for the interior of the church was that obtained indirectly from the side windows across the aisles, except for such as may have been received from a tower at the crossing.

Probably the best example of this Poitevin type is that of Notre-Dame-la-Grande at Poitiers, of which the construction is entirely

similar to that of S. Savin; except that the structure of Notre Dame is reënforced and stiffened by the use of transverse ribs built into the vaults and projecting from their soffits, and which form a series of arches springing from pier to pier across the church in sets of three. The wall piers are made heavy for the purpose of taking up the lateral push of the triple arch, and project externally forming buttresses, as

279—S. Savin (Vienne)· cross-section of church given in Fig 278. (From D. and B.)

may be seen along the flank of the church (Fig. 280). Further strength and stiffness is given by the blind arcade which crowns this wall, formed by the arches turned between the buttresses. These serve to tie the piers together and are, in reality, the archivolts forming the sides of the aisle vaults within. The structure is then a system of piers and arches—a masonry "frame work"—the spaces between which are filled

with curtain-walls and vaults. This eleventh century church has a west front which is not wholly of that period, but which must have taken its character as a piece of associated sculpture from the years 1050–75. The church itself is shown in Fig. 280 as it is seen from the south-west, and the disposition is interesting. The transept is no longer recognizable, but the tower built over the crossing, diminishing

280—Church of Notre-Dame-la-Grande at Poitiers (Vienne) from south-west. (From photo.)

in size story by story, is a vestige of much earlier influence acting upon the eleventh century builder who had not yet perfected a type of central tower which would be wholly to his liking. The flanking towers of the west end are also of great interest, for they show a disposition to break away from the severity of the earliest northern Romanesque as seen in the plain and impressive bareness of the Rhine country (Chapter IV) and to harmonize the main forms of the church with the elaborate sculpture proposed for it. The extreme refinement of the parts is

worthy of notice. The conical roofs of all three towers are built with a convex curve so decided that even in the small scale of the photograph it is plainly seen. This curve is apparent, although the whole roof of each tower is covered thickly with a system of upright rounded projections resembling reversed scales, and having the joints of the stones so placed, in the axes of the "scales" that water cannot enter them. The frankness with which this method of treating the spire as part of the stone building itself, as contrasted with whatever roofing of lead or slate or tiles was to cover the broad slopes of the church roof, is noticeable. The tower and the turrets alike are treated as part of the decorative stone-work which is conceived altogether as frankly as in the case of an Egyptian stone-cut temple, while the roofing which is to be applied to wood-built roofs and to shelter the vaulting below is treated apart and without any attempt at ornamentation. In like manner the rounded form of the turret is not insisted on until the eaves of the roof are nearly reached, in an ascending mass. All the lower part is a compound pier, made up of engaged columns, their rounded mass leading naturally enough to the larger cylinder of the turret, but associated still more strongly with the vaulting shafts within. Between these groups of clustered columns stretches the broad west front with three porches, of which the centre one alone has the slightly stilted half-round arches which we associate with the porch. The Oriental two-centred arch is used in both the side portals. These arches are covered thick with sculpture whose strongly decorative intention needs no explanation, but there is also to be seen the representations of sculptured incidents and of the legends of the church as being, indeed, the only subjects which would engage the chisel of the sculptor in the eleventh century. The crowded mass of minute parts in this sculpture has caused a certain protest against it on the part of persons unaccustomed to such varied decoration, but even a cursory examination shows the strongly significant purpose of it. The arcades which carry the great string-courses are strongly marked. Their supporting corbels are not made less, but even more, intelligible and more strenuous by the vigorous heads—human and animal—into which they are wrought. The scrollwork of the outer archivolts and the crouched and seated figures of the archivolt within and under shelter, are as perfectly adapted to the radiating structure of the arch as they are effective in mere relief, and in the resulting light and shade. In fact, an examination of the front, even in its pres-

ent weathered condition, shows it as legible—as intelligible—a piece of combined sculpture as it is an effective piece of surface ornamentation.

281—Western tower of S. Porchaire, Poitiers (Vienne). (From photo.)

In the same town, the admirable church of S. Porchaire has a tower of the purest Romanesque type (see Fig. 281). Those who are interested in such analogies may find a close resemblance between it and the cimborio of Salamanca in Spain. The fault in all such designs is in the comparatively small scale of the different parts. The little colonnettes and their capitals look as if a very slight blow or slightly uneven settlement of the tower would throw them out of place. This fault, which is more plainly seen in the modern imitation of the work, is redeemed in the eyes of the lover of Romanesque art by the great solidity of the mass upon which they are planted. These small members seem to be hardly more vital to the structure than the carved grotesques of the front of Notre Dame at Poitiers (Fig. 280).

Of the same epoch is the beautiful tower of S. Radegonde, in the

282—Poitiers (Vienne): tower of church of S. Radegonde. (From Ap. of Arch.)

same town of Poitiers. In this instance the characteristic alluded to above—the use of many small and slight members which suggest an insufficient solidity of structure—is equally noticeable, and as the ancient doorway has disappeared the compensating effect of its massive details is lost. In this respect the tower of S. Porchaire is most noticeable. When the photograph of the latter was taken, about 1860, the new level of the street had not been disturbed to show the old porch complete, and indeed the eye of the visitor came on a level with the necking of the capitals when that photograph was made. We are not, therefore, to judge of the proportions of the tower from this view, but its essential solidity, in spite of the system of little colonnettes; and the beauty of proportion secured by the succession of openings, are all as noticeable as if the tower were seen complete. In this matter, the superimposition of four stories with constantly changing system and scale of openings, this tower is a study. The very beautiful octagonal belfry of S. Radegonde has been described in the author's handbook, "Appreciation of Architecture," from which Fig. 282 is taken.

283—Capital in choir of S. Radegonde, Poitiers (Vienne). (From photo.)

The sculpture of the interior has been much disfigured by numerous successive alterations, and a more recent restoration has disguised it all by modern painting. This modern painting was, however, closely based upon earlier work. Fig. 283 shows one of the pillars of the choir arcade, taken before the restorations of the nineteenth century. The Scripture incident of the ministering by angels to a sacred personage, translated into a legend of the church with lions licking the feet of the saint, forms the subject of this capital. In the illustration it is dwarfed by the immense cièrges, the altar candles, which rise beside it; but it is an effective piece of ecclesiastical sculpture. Pleasantly contrasting with it is the strong Corinthian influence seen in other columns of the same arcade. There are six of these heavy round columns beside the responds arranged in the half-circle of the apse, and

the seven arches which spring from them are sprung in the curved wall.

An important step in the progress of vaulting was to give to the central vault the form of the pointed arch, which, being higher in proportion to its width, produces less lateral thrust; and, almost coincident with this movement, we find the aisle vault simplified to the form of a corresponding longitudinal barrel-vault. The transverse arches are retained in the three vaults as in Notre Dame of Poitiers (Fig. 280), as well as the exterior arcades.

Of this type is the church of Aulnay-de-Saintonge, one of the most noteworthy Romanesque churches of the Poitevin school: although some minor parts of the exterior have been refinished at a later date, it is an almost intact building of the late eleventh or early twelfth century. Fig. 284 shows the interior of the nave as seen by an observer standing just inside the west door and facing the apse. The form of the vault with its reinforcing transverse arches can be made out in the darkness overhead. Fig. 285 gives the exterior from the south-east, and exhibits very clearly the constructional lines of the building: the buttresses corresponding to the series of transverse arches and standing opposite to the piers seen in the interior; and the longitudinal arches connecting them as we have seen in the church of Poitiers. In plan, the church is seen to be a close imitation of the basilica: three aisles and transept with a tower at the crossing; and three apses corresponding to the three divisions of the nave.

As an elaborate example of the decorative sculpture of this period, this church is especially remarkable. It is possible to find, perhaps, more beautiful specimens—such as those to be seen later on in Provence—but as a complete decorative scheme, an artistic conception fully carried out in one period, this building is worthy of study. The illustrations above show quite well the capitals of the nave, and give some idea of the treatment of the exterior. Fig. 286 shows on a larger scale a part of one of the western doorways. It is seen that each voussoir is a separate and independent bit of beautiful leafage; each of the two exposed faces of each block has been carved. This carving has been done—as was the custom of the time—before setting the stone; each voussoir, then, shows its individual form, and yet is a perfectly subordinated part of the decorative band forming the archivolt. The suggestion given for decoration by the use of purely architectural sculpture, of conventional leafage, is certainly worthy of note.

It will be seen that at Aulnay the pointed arch has been freely used, associated with the more typical round arch. The doorway of Fig. 286, its corresponding one in the west front, and other parts of the building, have the pointed arch, as if to conform with the nave vault; and those of the two doorways are noticeably high—almost of the form known as lancet. These western doorways are remark-

284—Church of S. Pierre at Aulnay (Charente Inférieure). Nave seen from the west. (From photo.) (See Fig. 285.)

ably like those of Notre Dame (Fig. 280), although of later date. There is the same effective disposition of three arches: a large round opening flanked on either side by smaller pointed ones; even the sculptural details are of the same spirited character.

Of minor importance, but still of much interest in the study of this Poitevin architecture is the little tower at Fenioux (Charente Infér-

285—Church of S. Pierre at Aulnay (Charente Inférieure). View from south-east. (From photo.)

286—Church of S. Pierre at Aulnay (Charente Inférieure). Detail of north doorway of west front. (From photo.)

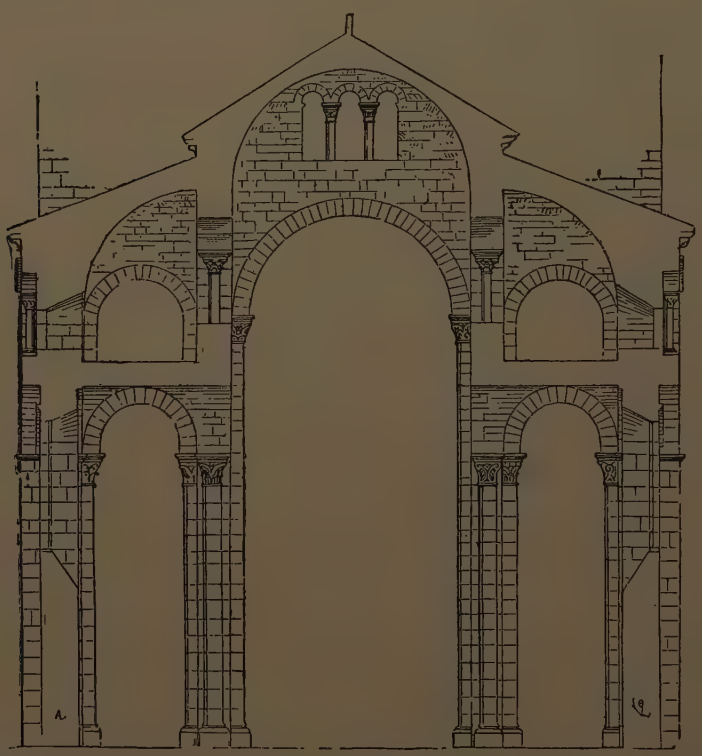
ieure). It belongs to a little church which probably dates from the early part of the twelfth century, and which is one of the most curious edifices of this country. It still contains some of the pierced stone

slabs with which the church windows were commonly filled before the use of glass, and which are described and illustrated in Viollet-le-Duc's Dictionary, which the interested student should consult for detailed information of this use of plate-tracery. The article contains an admirable drawing of one of these windows. The tower is thought to be of a later date, and seems worthy to be illustrated here (Fig. 287) as a curious variant of the types of the south-western districts. It will be noted that, above the square base, the tower is circular, consisting of two stories, and a conical roof, a form more peculiar to Périgord than to the other Romanesque schools, which were given to square or octagonal superstructures. The topmost story, consisting of an open arcade, was doubtless inspired by the remains of Roman work such as the smaller monuments which have been described in Vol. I, and of which an admirable example is that at S. Rémi (Vol. I, Fig. 253). The conical roof has the same convex curve—a sort of entasis—that we have seen before in Notre Dame at Poitiers, and, like that, is of stone worked into a system of scales carefully designed for the purpose of shedding water with the least possible detriment to the masonry. Fenioux should be compared also with the turrets of the front at Angoulême (Fig. 277).

287—Tower of church at Fenioux (Charente Inférieure). (From photo)

A further development of vaulting, always tending to the greater stability of the nave, is found here in Poitou, and extensively followed in the churches of Auvergne; the use of a half-barrel or "ramping" vault over the aisles. Although this is believed to have had its origin in Poitou (probably at Parthenay-le-Vieux) there are now in that province but few, and unimportant, churches having this type of roof; so that it is better considered in the buildings of Auvergne.

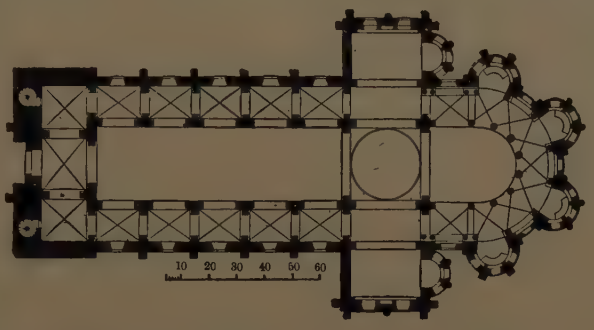
The churches of Auvergne are closely allied to those of Poitou in their structural forms; but these important differences are to be observed:—the churches of Auvergne, with but few exceptions, retained the triforium—the second story of the aisles, which is wholly lacking in Poitou; and their builders, to some extent, undertook the task of admitting light directly into the central nave. This important innovation was brought about by increasing the height of the nave vault so as to afford room for openings below its springing line and above



288—Clermont-Ferrand (Puy-de-Dôme): church of Notre-Dame-du-Port, first half of the eleventh century. Length including chapels about 150 feet. (From Eu. A.)

the aisle roofs; a reversion to the basilica with its clearstory, due to the influence of the Burgundian school. Furthermore the builders of Auvergne were more advanced in another particular of construction: they did away with the last vestige of the wooden roofs, the use of which the Poitevin school had not seen its way to avoid. The latter constructed their vaults very light, avoiding any excess of masonry which might be thought to overload such a thin shell, and so were forced to protect the stone roof with a wooden structure resting in part

on the vault itself, or, in a better form, carried on the longitudinal walls which were consequently carried higher for the purpose. In Auvergne, on the other hand, we find the solid, homogeneous roof to be the rule: the upper surfaces receive a filling until they are brought to the required slope for the final covering; and the entire roof-structure thus becomes one uniform mass, showing a curved stone ceiling within, and covered without only by the necessary finish of tile, slate, or the like. In Auvergne, this roofing most commonly consisted of stone flagging which was readily fashioned from the volcanic rock of that district. In this systematic and well-considered method of roof-construction, these builders were no doubt inspired by eastern traditions, and by the example set by Roman remains—the same principles are found to be followed in the south, whence the influences spread north and west.



289—Plan of church shown in Fig. 288. (From Eu. A.)

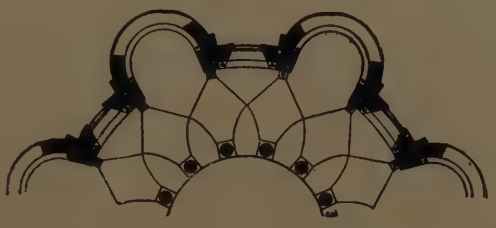
Figs. 288 and 289 give the plan and cross-section of the church of Notre Dame du Port at Clermont Ferrand which may be taken as the type of the earlier form of the Auvergne School; that type which seems to have been derived directly from Poitou and which prevailed in Auvergne until its later modification by the introduction of the clear-story. From Fig. 288 it will be seen that the use of the half-barrel vault was a decided advance in the problem of resisting the thrust of the main vault; indeed the rampant arch is nothing more than a strut transferring a part of that thrust directly to the outer walls, in the manner of a flying buttress of Gothic times. The entire system is further bound together and stiffened by the transverse arches which are seen at both stories of the aisles. The lower vaulting of the aisles follows the Roman type, which had been soon abandoned by the Poitevin school: a series of square, groined vaults, this system being continued around the deambulatory of the east end, but very cleverly modified to suit the curve, as is shown more in detail by the plan, Fig. 291, and the interior view, Fig. 290.

In considering this vaulting of curved plan, it would be well to

290—Detail of east end shown in Fig. 291. (From Eu. A.)

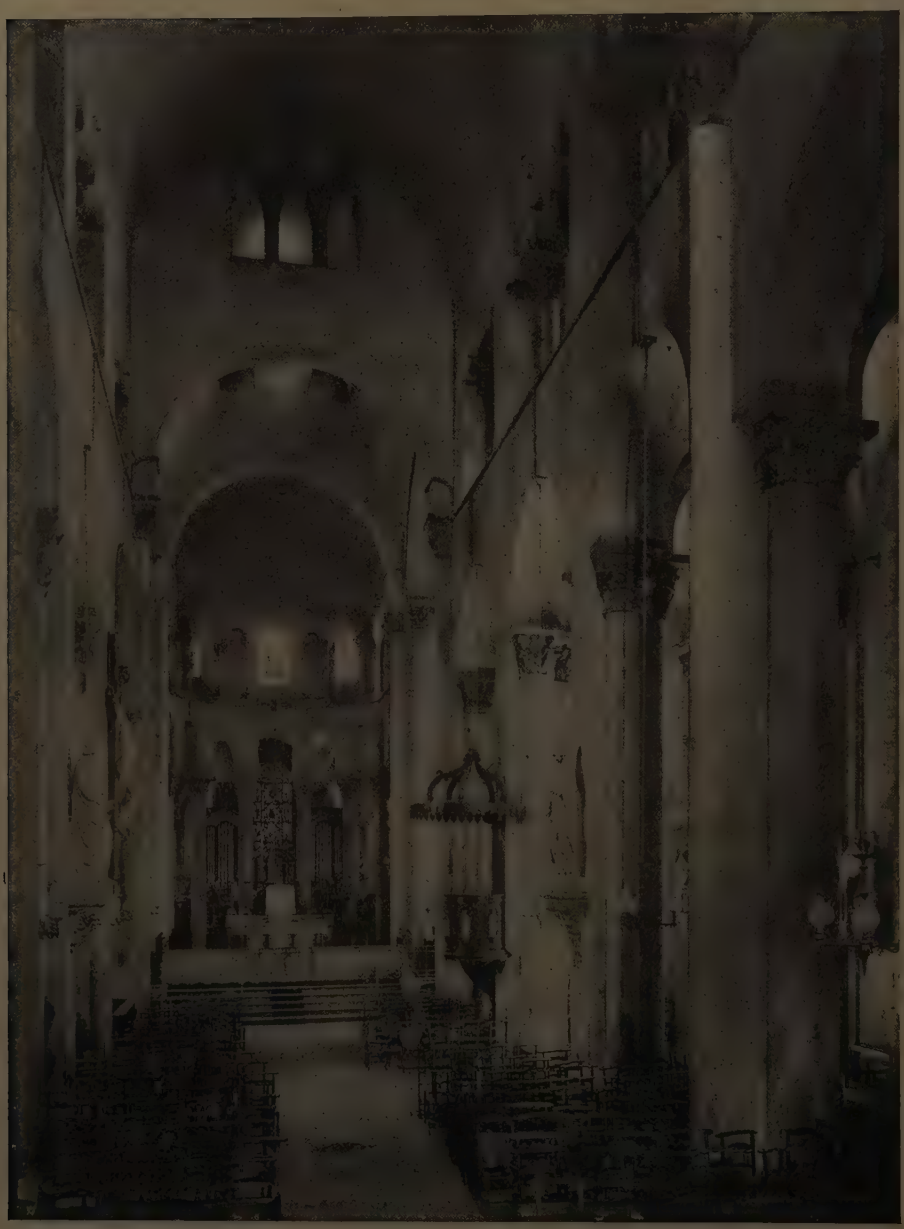
refer to the analysis of the groined vault in the footnote on page 271 and to compare the lines of the intersecting surfaces—that is, the groins—of the two plans. Those of the apse at Clermont are no

longer straight, but are bent as they approach the abutments of the inner side of the curving aisle: For the first result of this curving is to make the arches of the inner side smaller than their corresponding arches in the outer wall, while their height remains the same, as is seen in the interior view; the warped groins are then the result of the sharp curve of the smaller intersecting the more gradual curve of the wide main vault. In order to give the smaller arches the same height as the rest of the vaulting, they are stilted, that is, raised on high vertical imposts, reminding us of those eastern arcades which we have examined in the earlier parts of this volume. This arcade is shown in the background of Fig. 292 and, more in detail, in Fig. 293. The former illustration shows nearly the entire length of the church looking eastward along the nave; the latter being taken from the same direction, but nearer the apse. A wonderfully decorative effect is achieved by this arcade turning around the apse, contrasting with the corresponding wide arches of the nave, which lead up to it: an effect still further heightened by the substitution of round columns for the heavy piers of the nave, where the spans are much less, and the loads to be carried are consequently lighter.



291—Clermont-Ferrand (Puy-de-Dôme): Ambulatory of Notre-Dame-du-Port (see Fig. 290). (From Eu. A.)

The exterior of Notre Dame du Port seems to have been much restored, but the appearance of this beautiful style of the Auvergne district may be studied from the sister church at Issoire, S. Autresmoine (sometimes wrongly called S. Paul), a structure erected soon after that of Clermont-Ferrand, and imitating so closely the earlier church that it is undoubtedly the work of the same builders, or instigated by their design. The north flank is shown by Fig. 294, and expresses very clearly the constructional lines of the design which have been noted above in the interior of Notre Dame du Port, the features which we have seen in the churches of Poitou as exemplified at Aulnay (see Fig. 285); the essential difference being that at Issoire we have the second story arcade corresponding to the triforium and provided at intervals with windows which transmit some light indirectly to the upper part of the nave. On the left of the illustration is seen the north



292—Church of Notre-Dame-du-Port at Clermont-Ferrand (Puy-de-Dôme). Nave, looking toward the sanctuary, seen in Fig. 293. (From photo.)

arm of the transept, and on the right the end of the narthex of which the tower appears above the main roof. This tower, although a recent rebuilding, has evidently been carefully studied from the original, as

also the central tower over the crossing which is shown in Fig. 295. This view is of the east end, taken from a point slightly to the north of the axis of the church: an excellent position from which to study the admirable grouping of the choir and its accessories. In the foreground are seen five radiating chapels opening from the deambulatory. Four of these, the half-round ones, are disposed just like those of

293—Church of Notre-Dame-du-Port at Clermont-Ferrand (Puy-de-Dôme). Sanctuary: deambulatory seen through the arcade beyond. (From photo.) Compare with Figs. 290, 291.

Clermont as shown by Fig. 289, and between the two central ones is introduced a square-ended chapel not existing in the earlier church. Above the chapel roofs rises the clearstory wall of the apse; the semicircular wall which stands on the columns of the deambulatory (Fig. 291); and above this again, the walls of the crossing surmounted by the octagonal tower, and from which the arms of the transept extend to the right and left. This structure over the crossing is itself an interesting piece of design, worthy of much study both for its construc-

tional purpose and for the resultant effective exterior. The octagonal tower rises above a cupola, which, with its pendentives, occupies the rectangle of the crossing, between the base of the tower and the arcade next below. On either side are half-barrel vaults, abutting against the cupola and enclosed by the cubical structures which extend east and west from the base of the tower with the lean-to roofs. Below and outside of these again are the transepts with barrel vaults beneath the gable roofs. This disposition of cupola combined with half-barrel

294—Church of S. Austremoine at Issoire (Puy-de-Dôme). From north-east: on the right, narthex and tower of west front. (From photo.)

vaults should be compared with S. Sophia in Constantinople, which has been treated at length in Chapter V of Book VII. It is not at all unlikely that the design of Clermont was suggested by the Byzantine church.

Much evidence of such Oriental inspiration is found in this district, and this, mingling with influences from Burgundy on the east and Poitou on the west, produced a singularly varied architecture, often far removed from that which we have above considered as typical of

295—Church of S. Austremoine at Issoire (Puy-de-Dôme). The east end. (From photo.) The transept at the extreme right is seen on the left in Fig. 294.

Auvergne. Thus, one of the most important buildings of this school—yet, perhaps, the least typical—is found at Le Puy where there stands a cathedral of extraordinary interest. Fig. 296 shows the long stretch of its buildings as seen from a point nearly north and from the top of a high rock which dominates the town and the cathedral itself. This rocky hill, the *Rocher de Corneille*, is crowned by a colossal statue of the Virgin, put up in the nineteenth century in the interests of an ecclesiastical movement. It is from the foot of this statue that the

296—Le Puy Cathedral: north flank. (From photo.)

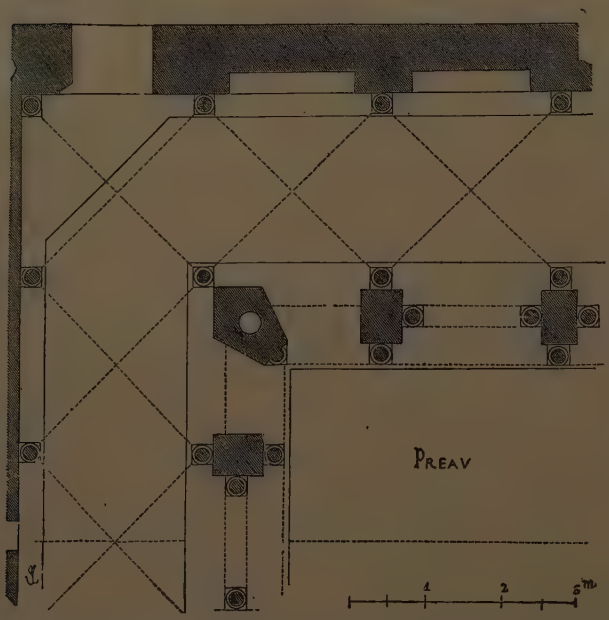
photograph before us is taken. The long nave, stretching nearly east and west, has a western façade which dominates the town and which is approached by a vast flight of steps from the level of the street below. These steps are carried up under the floor of the church, and approach the sanctuary and the crossing by openings in the floor through which the stairs ascend. The crossing, then, is crowned by the octagonal cupola seen in the middle of the picture; and the tower at the extreme left hand, though seemingly on the axis of the church,

is really north of the axis, nearer to the spectator than the sanctuary and cupola which covers it. The long building at the right, open at the top and partly cut off by the edge of our picture, is a part of the old bishop's palace, and directly at its foot and hardly seen in the depths under the higher walls, is a most interesting cloister, famous in the history of mediæval architecture for its beautiful detail. The church represents a building of many different epochs, but the greater part of the interior was completed before the beginning of the twelfth century and nearly all the details of the exterior are equally ancient. The tower only, and the west front shown in Fig. 297, are undoubtedly of 1120 and the following years.

297—Le Puy Cathedral: west front. (From photo.)

The full explanation of the plan and construction of this famous church could only be given by two or three plans at different levels, and a number of sections, cross and longitudinal. There are six nearly square bays in the great nave west of the crossing and its cupola, and of these not less than four are raised over that lofty and elaborate substructure which contains the great staircase rising sixty steps from the street. The west front expresses this difference in level by the lofty doorways which form its lowermost story. They would be wholly out of proportion in a Romanesque or even in a Gothic west front if the cathedral stood on level ground. This front, though restored, and with special care for the preservation of its contrasting colors, is still intact in its main

features, and is capable of giving a nearly perfect notion of the twelfth century design. The photograph seems to have been taken about 1875, before the somewhat elaborate rebuilding of the structure which adjoins the front of the cathedral on the extreme left. Those six bays, as well as the crossing, are roofed each with an octagonal cupola rising from pendentives, in a manner following closely the Byzantine method of building which has been considered in Book VII, but with this important difference that, where the Oriental builders had the advantage of an abundance of brick, and hence were able to vault even the greatest areas without the use of centering—the builders of the French cathedral have reproduced the Oriental forms in accurately cut stone: this method calling for not only extensive means of support from below, but scientific and careful shaping of each wedge-shaped stone block. The Oriental form of the structure is, however, hardly revealed in the exterior for the series of nave cupolas are covered with a continuous roof, repeated below on either side over the aisles:—the great dome of the crossing being the only one which stands alone and without a wooden roof: in this respect like its Levantine prototype. The side aisles and other portions of the structure are closed with groined vaults not different from those used generally in southern France during this period, as will be seen farther on in the discussion of other schools.



298—Cathedral of le Puy: plan of angle of cloister (see Fig. 299). (From V-le-D.)

The cloister annexed to the cathedral is no less interesting in its way than the church itself with which it is practically contemporary,

the greater part having been built early in the twelfth century. It is noteworthy as an early example of the abandonment of the wooden roof: the galleries being covered with groined vaults of semicircular section in square bays. These are carried on compound piers of an admirable design: square cores of coursed stone with free columns at all four faces. The piers themselves stand on a *bahut*, a continuous pedestal which is duplicated on the inner side of the gallery and supports columns corresponding to those of the inner side of the piers. This disposition is shown in Viollet-le-Duc's plan which is reproduced in Fig. 298, and which shows clearly the ingenious and logical arrangement adopted at the corners of the square court. At the inner face of the wall, the end arch is given the same span as the others of the series, in order not to interrupt the uniformity of the vaulting squares and the consequent equal spacing of the columns. The vault-system, then, turns the corner about a single isolated column, a disposition necessitating the omission of the usual square pier, which is replaced by one of irregular plan, with splayed jambs, giving a smaller arch at the outside in place of one of the regular span. All this produces an admirable feature externally at the corners as may be seen in Fig. 299. The arrangement of the two smaller arches meeting at the reëntrant angle seems at once a strikingly logical and effective bit of designing; carrying, as they do, a relatively heavy mass of masonry just where it seems to be most needed to stiffen the angle.

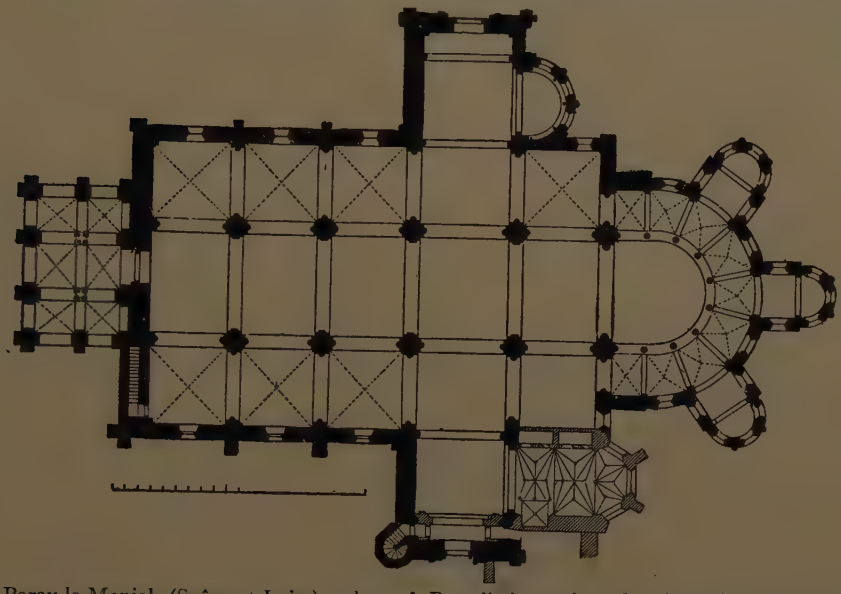
299—Le Puy: cloister which is seen on the right in Fig. 296. South aisle of cathedral in background. (From photo.)

We come now to that school of architecture which produced the most complete designs in church building of this period; most complete at least in so far as their practical side is concerned. For, however much we may admire the decorative quality of the buildings with which we have been concerned above, much as these may appeal to us in

structural form, in ornamental sculpture, in applied color—they had, nevertheless, very serious faults. The churches of Poitou and Auvergne had, in common, that very serious drawback: the lack of light; and the domed churches of Périgord, although their form supplied that need, were necessarily small, owing to the difficulties pointed out above in the way of erecting their cupolas in cut stone. These two objections, then, were overcome by the school which we have now to consider, and which is known as the Cluniac, after the great Benedictine abbey of Cluny, begun in 1089, the choir being completed six years later. Scarcely anything of the original building remains, parts have been rebuilt, so that it is better for our purpose to examine such churches as remain to us whose architecture follows the example set by the mother church. This school is sometimes known as Burgundian (No. 9 in Fig. 268), although the influence of the Cluniac building extended over such a wide territory that this name hardly seems descriptive.

Due west of Cluny, and in the same *département* of Saône-et-Loire, is Paray-le-Monial where there still stands the church of a former Cluniac monastery, dedicated in 1104. Its plan and cross-section are given in Figs. 300 and 301, from which it will be seen that, besides the clearstory, the structure has these essential differences from the types of Poitou: the transverse arches are pointed, over the aisles as well as the nave, and the buttresses, rising above the aisle roofs, along the nave, are heavier than those which we have seen hitherto (compare Figs. 285 and 294). This combination of the pointed arch and heavy buttress is the logical result of introducing the clearstory: for the masonry of the aisles is no longer high enough to resist the horizontal thrust of the nave vaults. This thrust is now somewhat reduced by the use of the pointed vault over the nave as we have seen at Aulnay (Fig. 284), and by a modification of the groined vaults of the aisles, which, in Fig. 301, are seen to have a decided rise toward the center—they are crowned-up so as to be considerably higher than even the point of their transverse arches. In spite of these precautions, much lateral pressure still exists to be taken up by the buttress. And the Cluniac builders seem to have relied so much on the buttress to do this work, with little faith in the intermediate walls, that they did not adopt the method of thickening the tops of those walls with the external arcades of Poitou and Auvergne. Some attempt was made to stiffen the walls by means of horizontal timbers imbedded in the masonry

from buttress to buttress, but these were of little permanent use, owing to decay. Here was the weak point of the clearstory: the increased height of the nave introduced a structural problem which was not properly solved until the development of the Gothic vault and the flying buttress. And it is to this weakness that is attributable the scarcity of intact and unaltered churches of this school. The clearstory walls and the adjoining masonry must soon have been cracked or dislocated —of which there is good evidence—and these portions were then re-

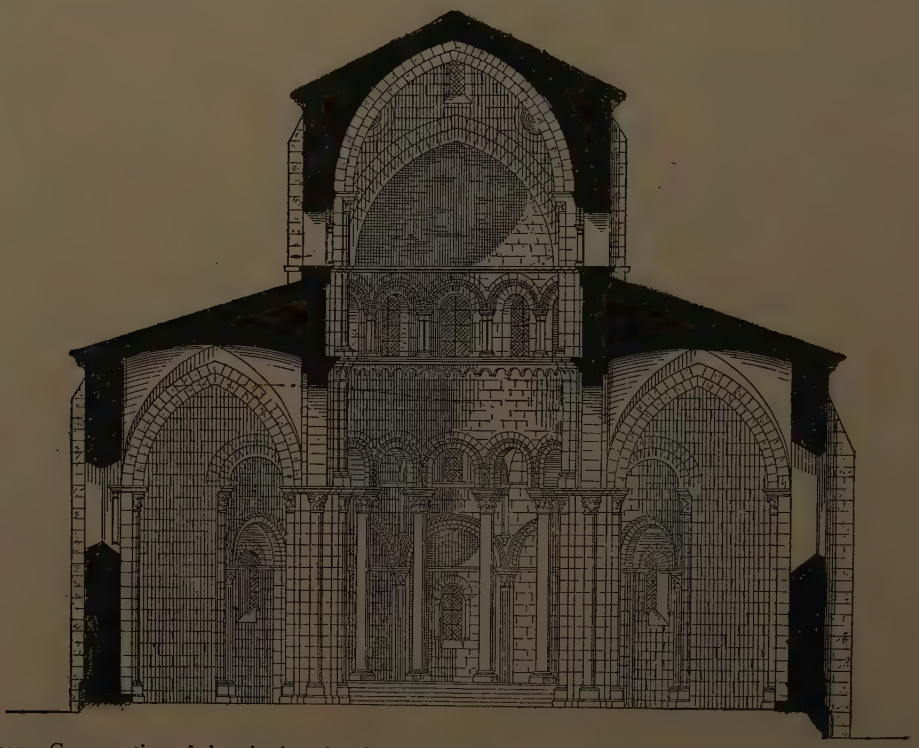


300—Paray-le-Monial (Saône-et-Loire): plan of Benedictine priory-church. The chapel in lighter tint is a late addition (see Fig. 301). (From D and B.)

built or, later, braced by the addition of flying buttresses in the Gothic manner.

The extended use of the pointed arch is one of the most prominent features of the Cluniac architecture, at least where the greatest strength is needed. Where heavy loads are to be carried, and their resulting thrusts are to be considered, we find the common use of the pointed arch: it is early adopted not only as we have seen illustrated in Fig. 301, but for the longitudinal arcades of the nave. Elsewhere, this school clung to the round arch: its followers seemed to have preferred the circular form and only turned to the pointed arch for reasons of construction. And so we find the full-centered arch invariably used for doors and windows; and even for the small openings of the curved arcades of the apses.

Fig. 302 shows the exterior of Paray as it appears from the northwest. Although, as a whole, the exterior does not present a very decorative conception, it is shown here as one of the very few unchanged designs of the Cluniac church. The central tower was taken down and rebuilt by the government commission, by whom other restorations have also been made, but there can be no doubt that the church appears as it did during the first half of the twelfth century.



301—Cross-section of church given in Fig. 300; showing clearstory windows. (From D and B.)

The southerly tower of the front, on the right of the picture, is older by a century and formed part of an earlier church on the same site. It appears to be difficult to obtain a good photograph of this church, owing to its surroundings, but by a comparison of this view with the plan, Fig. 300, the general lines of the structure can be made out. The two towers of the front rise above the two square bays of the outer corners of the porch, and so are entirely detached from the upper part of the nave, which shows beyond them on the left with its clearstory windows separated into groups of three by the heavy buttresses. This disposition returns along the transept. Below the

clearstory can be made out the aisle roof extending north from the porch and tower.

The interior of Paray seems to have been so much renovated, that, to study an interior of this style, it would be better to pass on to Autun,

302—Abbey church at Paray-le-Monial (Saône-et-Loire). View from north-west. (From photo.)

north of Paray-le-Monial and in the same *département* of Saône-et-Loire. The cathedral here is a most beautiful example of this Burgundian architecture: the characteristics are well shown in the illustration given, Fig. 303. This view of the interior shows clearly the disposition of the nave walls which are throughout similar to those of

Paray which have been discussed just above. On the left is the lower story of pointed arches, immediately above them a much smaller blind arcade, and above these the windows of the clearstory: only one to each bay, instead of three as at Paray, an arrangement evidently adopted to avoid undue weakening of the clearstory wall. The row of small arches forming the second architectural story corresponds in

303—Cathedral at Autun (Saône-et-Loire). Nave looking toward the apse. (From photo.)

height approximately to the pitch of the roof behind them (see Fig. 302); and, although properly called a blind arcade, is pierced here and there to afford some light and air to the space below the roof and above the aisle vaults.

It will be observed that the piers of the nave are much more elaborate than any we have seen hitherto: their section is more complicated, forming a sort of doubled pilaster at each face of the wall, and these projecting members continue up to support the transverse arches,

with which their forms correspond. A strong Roman influence is evident in the details of these Burgundian churches, which is here shown in the design of the piers. The square-cut pilasters of which they are composed, with their fluted shafts, give a curiously classic look to the composition; an effect which is further heightened by the treatment of the pilasters which are continued up the face of the wall, and which are interrupted at each story by a group of mouldings resembling

304—Abbey church at Vézelay (Yonne). Nave seen from the choir: in the background is the west wall with openings into both stories of the narthex. (From photo.)

a classic capital: the whole simulating closely the superimposition of Roman orders.

The most interesting church of this Cluniac Romanesque is undoubtedly the abbey church at Vézelay in the department of Yonne. Certainly, it would be difficult to select a more beautiful interior of this period than that shown in the two illustrations Figs. 304 and 305. Both of these views are taken from near the choir, looking westward: the former along the nave, the latter along the north aisle. From these photographs, it will be seen at once that the building does not show the distinct characteristics which we have found were typical of the

Burgundian churches: there is indeed, much influence of the Auvergne style to be seen in the exclusive use of the round arches, even for the transverse arches of the nave, and in the form of the piers. But in examining the nave there is found a great departure from the principles we have seen; yet this very difference gives evidence of the boldness and inventiveness of the Cluniac builders. Fig. 304 shows that, while the clearstory is retained, the roof of the nave is unusually low; almost as low, relatively to the aisles, as in the dark churches of Poitou:

305—Abbey church at Vézelay (Yonne). North aisle seen from the choir; entrance in the background. (From photo.)

so that the clearstory windows are almost entirely above the springing line of the vault, and occupy the tympanums of an arcade corresponding to the arches of the lower story. To accomplish this combination —the low vault with the clearstory windows—the barrel vault has been abandoned: the nave is roofed with groined vaults not unlike the aisle roofs which we have considered above, and which are also seen here (Fig. 304), but with the radical difference that, while the bays of the aisles are square, those of the nave are oblong. The width of the nave-bay corresponds to that of the aisle, while its length is equal to the width of the nave. These conditions given, the designer has set

himself the task of devising a groined vault of an entirely new form to fit the unusual space; a long rectangle in plan, limited by round arches of different spans and, consequently, of different rise. The solution of the problem has resulted in a vault higher at the center than at the outer sides; a form similar to that over the aisles at Paray (Fig. 301). The load of the vault and its horizontal thrusts have consequently been concentrated at the piers; and the intermediate curtain walls are relieved of all pressure, so that these could be pierced with window openings without danger.

This system would seem to have assured the use of the clearstory, and so solved the problem of lighting the nave. But there remained the question of resisting the concentrated loads at the piers; buttresses heavier than ever before were needed at these points, and the architect of Vézelay has not been able to meet the exigency. The piers have diverged and the vault has sunk, as may be seen in the photograph. The design of this church, therefore, had but few followers; nevertheless, it must be considered as the creation of men of great ability and of very progressive thought for this period. For, it must be noted, this structure is contemporary with the church at Paray-le-Monial—both were dedicated in 1104—and even antedates the cathedral of Autun. It has been thought that the design of Vézelay had an influence in the evolution of the Gothic vault.

The south of France can hardly be said to have developed a style of its own during this period; and but few buildings seem to have preserved their original character. The design of the churches was largely the result of combined influences from Auvergne and from Poitou; and many features were strongly reminiscent of the Roman architecture, the remains of which covered the soil of Languedoc and Provence. At the same time, this district developed a school of decorative sculpture which may be considered as fine as any of this time, even in France; and of these sculptures many beautiful examples are left to us as valuable studies, although the buildings to which they belong are in many cases altered or incomplete. The most important of all these, considered as complete architectural compositions of natural forms applied to the structural members, are undoubtedly those of S. Trophime at Arles and of S. Gilles. The former is an abbey church of the twelfth century, with a most interesting cloister, of which two galleries of that period still remain. One of these is shown in Fig. 306, the photograph being taken from the inside to show the

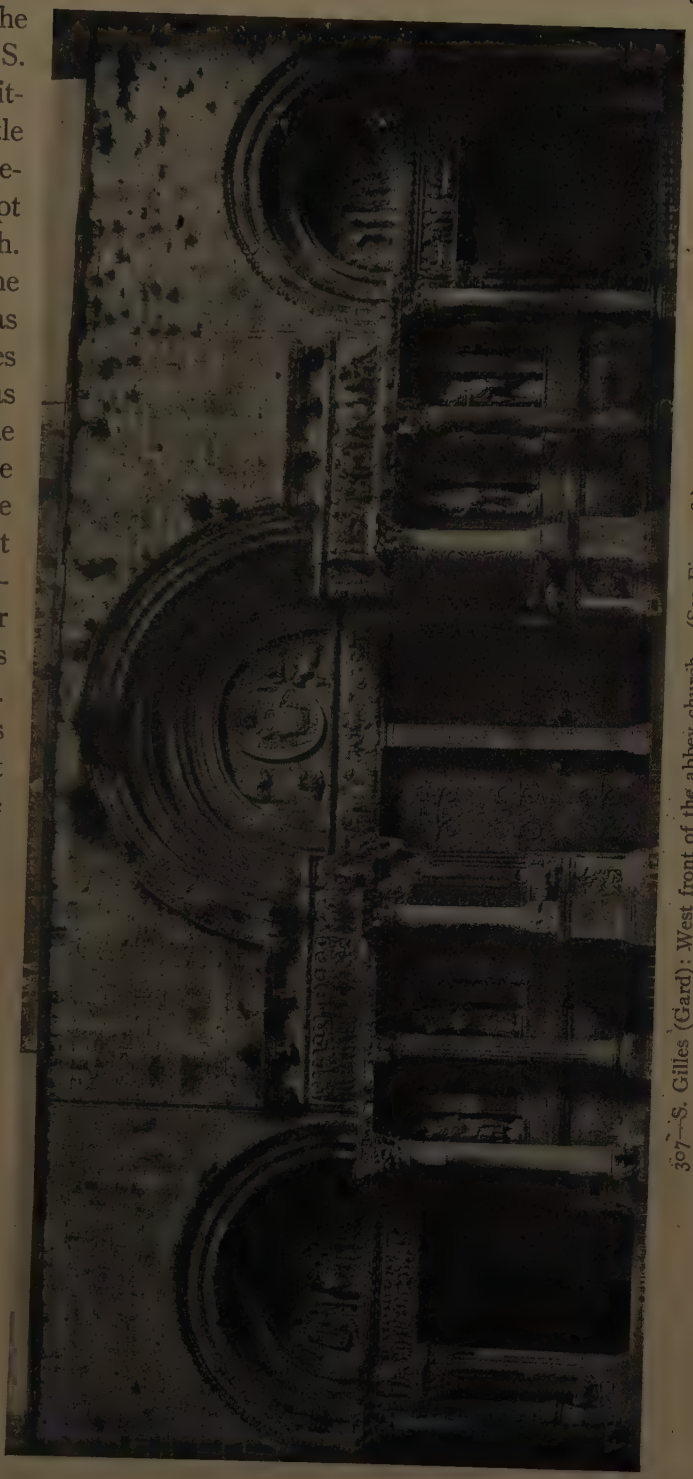
sculpture of the piers; and incidentally giving a view of the vaulting. The vault is of a type peculiar to the south: a modification of the simple barrel vault, which consists in placing the imposts much higher at the inside than the outer springing line which is marked by the top-most band of mouldings seen in the photograph. The curve of the under surface is thus no longer that of a cylinder but a compound curve giving the vault a form which can best be described as ramping; and which conforms more closely to the slope of the roofing above. The

306—Arles (Bouches-du-Rhone): Cloister of S. Trophime. (From photo.)

vault is built with transverse arches springing from the massive piers, between which the upper masonry is carried on coupled columns. Thus the cloister galleries are composed each of three bays of four arches each, forming a square of some fifty feet on a side. The greatest interest in the study of this building, however, centres on the sculpture, which is of wonderful richness and in which the draped human figure plays an important part. In this respect, the sculpture of the south surpasses that of the central regions, of which the most decorative effects, as we have seen above, were obtained by the more abundant use of conventionalized forms of plant-life with some commingling of animal

forms. Of the church of S. Trophime itself, but little of interest remains except the west porch. This is of the same type as that of S. Gilles (Gard) and, as the latter is the more elaborate and complete composition, it will be the better example for the study of this architecture. Indeed, it is probable that S. Gilles is the earlier of the two fronts, and that the doorway of S. Trophime was a close adaptation of the former.

The western doorways of S. Gilles are shown in Fig. 307; the rest of the original front has been destroyed or never com-



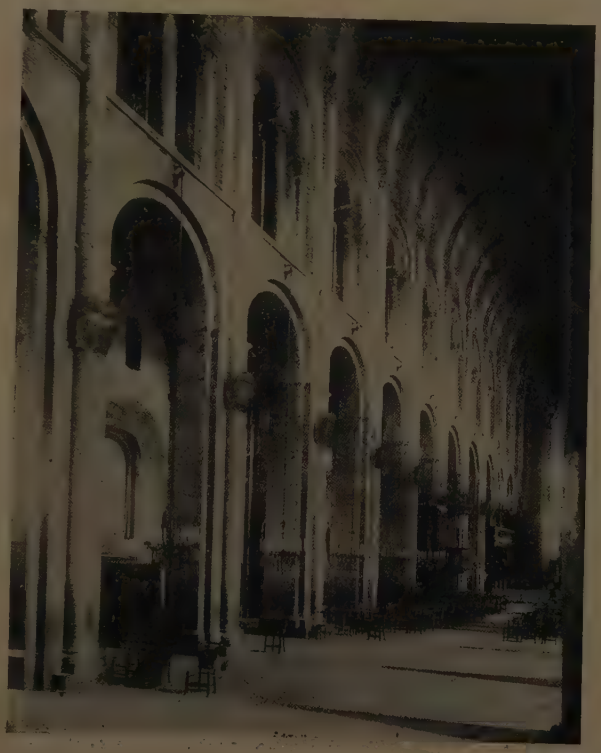
307.—S. Gilles (Gard): West front of the abbey church. (See Fig. 308.) (From photo.)

pleted. What strikes the observer at once in the composition of this front is the association of three doors in one architectural group: this being undoubtedly the earliest attempt to combine the three entrances in one composition, a treatment which received its greatest development in the fronts of the Gothic cathedrals. Yet even these latter can hardly be thought to surpass the front of S. Gilles in beauty of design and excellence of execution. In this front, the decoration by sculpture is almost wholly with the use of human figures: the purely architectural carving has so unimportant a part that its effect is almost negligible; yet the disposition of the groups and of the single statues to the needs of the architectural design can hardly be improved on. The clever management of the arches at different levels is especially worthy of note: the frank way in which the frieze forming the impost of the central arch is stopped before reaching the archivolts of the side doorways, in order to allow these to spring at a lower level, avoiding undue height in proportion to the smaller openings. Fig. 308 shows, on a larger scale, a part of the southern jamb of the central doorway.

308—Detail of southern jamb of the central doorway shown in Fig. 307. (From photo.)

In Toulouse (Haute-Garonne) there stands the most interesting

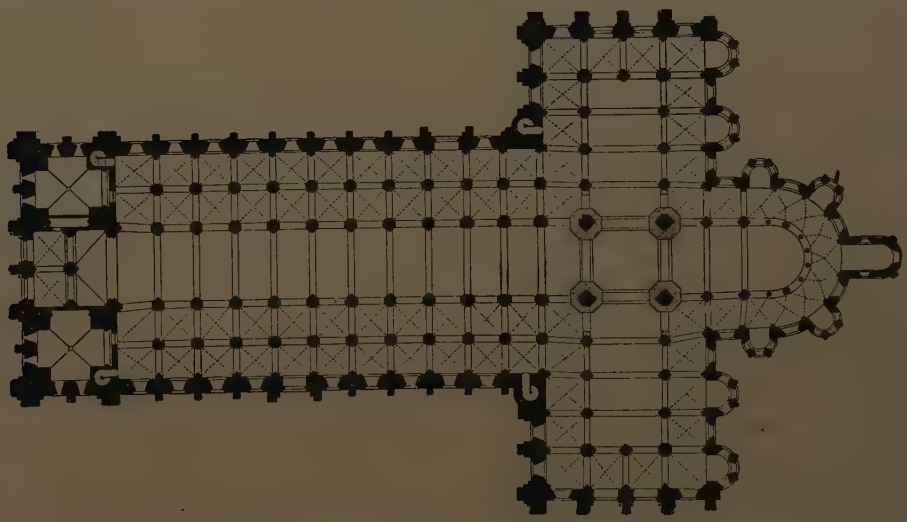
Romanesque church of southern France, S. Sernin (or Saturnin): famous for its size and for its having five aisles, a most rare plan for this period. This building is commonly considered as belonging to the school of Auvergne, with which its construction shows a close relationship, yet it has so many features to distinguish it from the more northern architecture that it will not be out of place to consider it in our study of the South. As in the churches we have seen of Auvergne and Poitou, the nave has no clearstory, but the outer aisles are so low as to allow of windows over their roofs lighting the inner aisles. S. Sernin is in fact, in structure, an enlargement of the typical church of Auvergne which is shown in Fig. 288. If to that church we add another aisle on each side, the roof of which should be below the upper windows, we should have the form of the southern church. Thus while the nave of S. Sernin is but slightly larger than that at Clermont, — twenty-eight feet,—its total width, outside the walls, is not less than one hundred feet as compared to some sixty-three. But in respect to lighting, S. Sernin has a decided improvement over the Clermont church. The galleries over the inner aisles are very much higher: almost equal in height to the lower stories; so that the openings into these galleries—the windows outside, the arcades within—are correspondingly larger with the advantage of greatly increasing the amount of light transmitted to the nave. The nave arcade can be seen in the illustration of the interior (Fig. 309); but this view is unsatisfying, owing



309—Toulouse (Haute-Garonne): Nave of S. Sernin (see Figs. 310, 311, 312). (From photo.)

to the difficulties in the way of obtaining a good photograph of that part. It will be seen, however, that each bay contains a pair of coupled columns with a discharging arch over them.

If we study the plan of the church (Fig. 310) we shall see other notable features which distinguish S. Sernin from its contemporaries. The transept is of very unusual dimensions, both in width and in length, and the inner aisle is continued around three sides of the arms, returning again at the deambulatory. Thus great prominence is given to the arms of the transept, which in this building are a very marked feature of the external design, as will be remarked by the view given in Fig. 311, which is taken from an excellent position for the



310—S. Sernin (see Figs. 309, 311, 312). (From D. & B.)

study of the group formed by the eastern parts. The great prolongation of the transept arm allows of two chapels built against its eastern flank, while the nave has five; another departure from the plan common to the churches of Auvergne, where an even number, usually four, is the rule in the case of the radiating chapels of the apse.

S. Sernin has thus the exceptional number of nine eastern chapels. Fig. 312 shows the church, with its remarkable tower, from the south-west, thus giving a view of the opposite (westerly) side of the transept which is seen in the preceding illustration. In the centre of the picture is one of the two staircase towers, from which there extends to the left the enclosing structure of the outer aisle, and above and beyond its low roof appears the wall of the inner aisle which is continued around

the transept. The tower is itself a structure of the greatest interest. Not completed until the thirteenth century, many years after the church, its style has nevertheless been kept in perfect harmony with the rest; so that it is to be considered as a part of the original conception of the building as a whole, except that the high pointed roof was probably not contemplated in the original design. It is almost entirely built of brick, including the colonettes and mouldings which are formed of brick cut or moulded for the purpose; and the use of stone is limited to the more decorative members such as belt courses, capitals and the small attached colonettes of the open parapet. This combination of materials obtains throughout the building, although a much greater

311—S. Sernin from the S. E. The transept on the left is that which appears on the right in 312 (see Fig. 309). (From photo.)

proportion of stone is used in the lower portions, and especially for the interior. The extensive use of brick is peculiar to this part of Languedoc owing to the scarcity of building stone; and the modification of the architectural forms to meet the requirements of this material gives these buildings a pronounced distinction from the cut-stone buildings elsewhere, and places them in a class apart. For this reason, if for no other peculiarity, it does not seem improper to include S. Sernin and other like buildings of this region in the southern school rather than in that of Auvergne. A singular result of the nature of the material used is seen in the triangular heads in place of arches in the openings of the upper stories, and again in the square windows below the eaves

of the nave. These are constructed of bricks laid with sloping, but not radiating, beds; so that the window head is not a true arch, but is composed of two inclined members of brickwork, which could best be described as struts. In still other peculiarities, S. Sernin contrasts with its northern contemporaries. These photographs should be compared with our foregoing illustrations to note the marked differences: the lack of sculptured ornamentation in archivolts and jambs which are made decorative only by angle-shafts and carefully considered mouldings; the very heavy buttresses providing great structural stability and giving an added touch to the decorative design of the exterior; the colour scheme resulting from the use of two contrasting materials. Simple as it is, a great deal of interest is to be found in the study of this southern architecture of brick.

312—S. Sernin from the S. W. Compare with Fig. 311. (From photo.)

The religious establishments of the Romanesque period have preserved by far the most important examples of architecture. What remains of civil building—town-halls, residences, bridges—have, as a rule, been greatly injured by alterations made from time to time to meet changing requirements. If we turn again to Poitou, we shall find a bridge of the twelfth century still remaining, it is believed, as originally built.

Perhaps this is the only bridge of which that could be said, and this

313—Twelfth-century bridge over the Thouet at Airvault (Deux Sèvres). (From photo.)

because of its out-of-the-way situation. For a bridge played an important part in warfare, especially when attached to a town, and was consequently subject to frequent destruction. The bridge at Airvault in the northern part of Deux Sèvres and not far from Poitiers appears to have remained, spanning the little river Thouet, as it was first built in the twelfth century, with but slight injury to its upper and more exposed parts, as the photograph shows (Fig. 313). It affords an interesting study of the economic use of masonry: a form quite unusual in this or later times. Each arch (or vault) consists of three separate parallel rings, across which, and spanning the intervening spaces, are laid flat stones, or flags, for the support of the road-bed.

314—Wrought-iron grille in the cathedral of Le Puy (Haute-Loire). (From photo.)

While pursuing the study of Romanesque architecture, much of interest will be found in the design of the accessories of the buildings—in the joinery, metal-work and other fittings. It is beyond the scope of this book to devote much space to a consideration of these minor, but no less curious, examples of handicraft, but mention should be made of the wrought-iron work which was, even in the eleventh century, thought to be worthy of much attention and of which a great amount has come down to us of extraordinary beauty of design and execution. In the cathedral of Le Puy there have been preserved some very excellent specimens of grilles, one of which is shown in the illustration Fig. 314. The beauty of the design is well enough exhibited in the photograph, but the scale is unfortunately too small to permit examination of the clever workmanship evinced in the mechanical details of construction.

CHAPTER III

LATER ROMANESQUE: NORMAN AND BRITISH

THE buildings in England which are known as Anglo-Saxon churches have given rise to much dispute concerning their exact epoch. Christian buildings which are probably of a time before the Norman conquest, 1066 A.D., are classed under this name, and this division has a reasonable accuracy inasmuch as the growing influence of the Norman invaders soon led to a more refined system of design. We do not know, however, whether the architectural influence spread rapidly or not. In the north and west of England the change in the habits of the people, in the demands of a parish or a diocese of rural traditions, might remain unaltered for a century or more. Thus, in the county of Durham, in the far north of England, the church of Monkwearmouth has a square tower, tall and slender compared to most early towers, and wholly built of rubble stone with the simplest possible arched doorway, and with window-heads which are cut through a slab of stone in rude imitation of a pair of round arches of small dimension. The plan, too, is the most simple possible —a long and narrow nave with a west porch formed by the ground story of the tower and nothing else, unless a small apse once existed at the east end. There is, however, a very curious sculpture wrought upon the jamb of the western doorway. It would express nothing but the spiral twist of two flat ribbons, and in this way would resemble the runic carvings of Norway, except for the appearance above this spiral ornament of a pair of birds' heads with long bills, perhaps intended as pelicans. The most complete church in England of undoubtedly pre-Norman work is that of Bradford-on-Avon, Wiltshire, of which there remains nearly unaltered the nave, the square eastern choir and the square porch on the north side, of such relative dimensions that it seems like a transept attached to the short, plain nave. In all these "Saxon" buildings a peculiarity in laying the stone quoins and

occasional pilasters used to stiffen the rude walls, is what is called by the English writers long-and-short work. Thus, at the corner where a stone wall changes direction, a stone two feet high and nowhere more than ten inches on the face, measured horizontally, alternates with two stones twenty inches long horizontally and not more than four inches high. This is, in significance, nothing more remote than the quoins common in stone building and which in the late Gothic domestic buildings of France are an important part of the design. The most

314*a*—Bradford-on-Avon (Wilts): Anglo-Saxon church. (From G. B. B.)

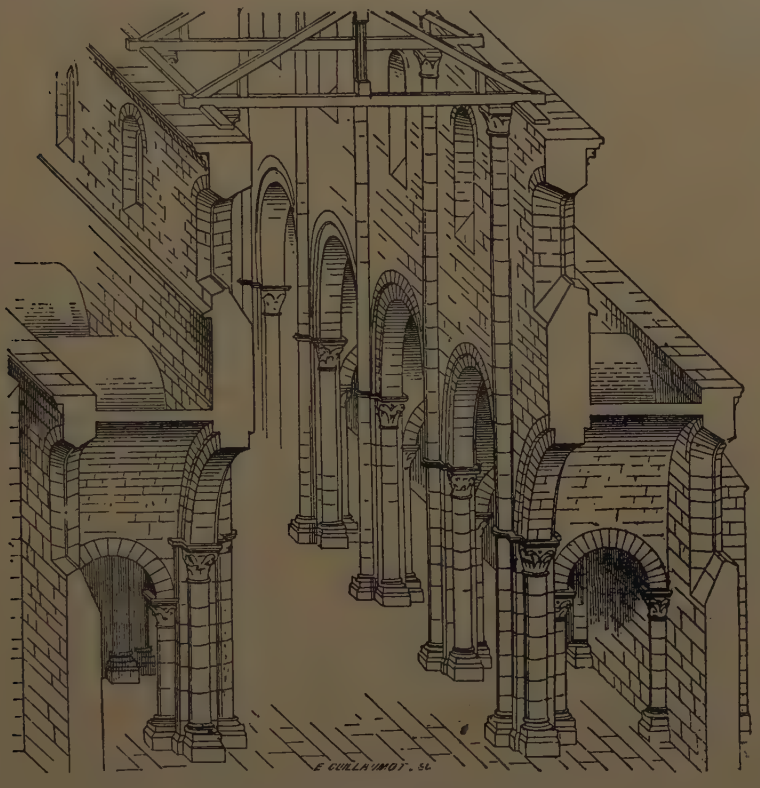
elaborate and on the whole successful piece of this early English Romanesque is in the tower of Branston, Lincolnshire, of which the door and the flanking arcades are shown in Fig. 314*b*. Such arcading—"blind" arcading—intended for ornament alone except that a certain rigidity is given to the wall in this way, became at a later time the most characteristic part of Romanesque church building, both in Italy and in the North.

In north-western France during this period there had been but little architecture of which we have any definite knowledge; but the inspiration of the Normans was to be felt in this region, as well as in England, from the latter part of the eleventh century.

Yet, even under the Norman influence, and until the middle of the twelfth century, the architecture of northern France remained singularly undeveloped as compared to that of the central and southern districts which form the subject of the preceding chapter. While the architects of Périgord, Poitou, Burgundy, and of those regions coming under their immediate influence, were struggling with the problem of vaulting with stone all parts of their churches, and developing several contemporaneous types of complete stone buildings, the builders of the north-west appear to have had little ambition to follow the example of their neighbors. The Normans seem to have preferred the form of the Latin basilica with galleries over the aisles, and a clearstory above that, and their adherence to this type of church with its lofty nave rising between independent and unsupported walls may have seemed to them a well-nigh insurmountable difficulty in the way of erecting a complete stone roof. So we find that a vaulted nave was almost unknown in Normandy and in those districts where her influence was chiefly felt, including England; and that the use of vaulting was limited almost exclusively to the aisles. Even the upper stories, the galleries over the aisles, were seldom vaulted, one of the rare examples being found in the ruined abbey church at Jumièges. The usual type, then, of the Norman church of this period has the lower stories only of the aisles vaulted, while the upper stories and the nave are roofed with wood. There are some instances, however, in which the nave roofs are carried, wholly or in part, on transverse arches of masonry.

314*b*—Branston (Lincolns): Anglo-Saxon church. (From G. B. B.)

The earliest and simplest form of vaulting was that consisting of a series of barrel-vaults across the aisles and perpendicular to the length of the church, of which construction Viollet-le-Duc has given us the careful study which we reproduce here (Fig. 315). The oldest example left to us is found at Reims in the church of S. Remi, dating from the tenth century; but here the transverse vaults carry the floor of a triforium which necessitates a greater height below the clearstory windows.



315—Vaulting of early Norman churches. Roof of aisles removed to show the system of aisle-vaults. (From V-le-D. Dict.)

The most usual system adopted by the Normans was, however, the series of Roman groined vaults in square bays precisely like those of Poitou which have been described in the preceding chapter (Figs. 278, 279), the wooden roof being retained over the nave. On these principles were built the two famous abbey-churches at Caen, founded by William the Conqueror. Both of these have unfortunately been much changed by successive alterations or rebuilding—especially by the addition of Gothic vaults—so that their interiors no longer retain

316—Caen (Calvados): church of la Trinité of the Abbaye aux Dames from the S. W. The clearstory is one of the most effective of the Norman type: tri-partite windows between piers, the central arch much the largest. (From Porter.)

much of their original character. Of the two, the church of la Trinité has the finer exterior and stands to-day as a nearly complete building of the twelfth century (Fig. 316); the central lantern is however later, and the cornices of the two western towers are an addition of the Renaissance.

This arrangement of towers became the rule in Normandy: a central lantern, corresponding exactly to the square of the crossing, and two smaller square towers flanking the western façade; the lantern, it is important to note, was in general erected directly on four arches sprung between the corner piers of the crossing, from which it rose square to the roof, open to the interior of the church with no intervening vault, at least near its base. The crossing with the high altar would thus have received a brilliant light from four sides of the tower.

317—Montivilliers (Seine-Inférieure): abbey church from the N. W. (From photo.)

The smaller churches of Normandy are apt to give us a better conception of the original appearance of the exterior than the more important edifices, like la Trinité, which have more often suffered from alterations. Figs. 317 and 318 show two of the minor churches of the department of Seine Inférieure, both dating from the early years of the twelfth century. These, although displaying less ornamental details than the church of Caen, may be considered as giving a fair representation of the exterior design as conceived by the builder of that period, in spite of possible modifications of the wooden roofs. In each case, the central tower may be taken as wholly Norman Romanesque, including the octagonal spire which is characteristic of the district at this time;

as is also the western tower of Montivilliers (Fig. 317), this last being of stone throughout, in the usual manner, including the spire and the pinnacles at its base. It should be borne in mind that this tower is one of two which should flank the west front; and allowance should also be made for the effect of the roofs which are noticeably too high. The main ridge, if continued eastward, would abut against the central tower at a point above the upper sill-course, which was obviously not the intention: the transept roof on the left would seem to be at about the proper level, which in the Norman churches was usually the same over all the four arms of the cross. The north aisle, nearest to the spectator, is also much too high and has been extended northward and westward so as to partly surround the tower. S. Georges-de-Boscherville (Fig. 318) exhibits substantially the characteristic grouping of the parts together with the disposition of the roofs—if we overlook the modern structure adjoining the north transept. The round apse without deambulatory and chapels, but having two stories of openings is typical of the style.

318—S. Martin-de-Boscherville (Seine-Inférieure): abbey church of S. Georges-de-Boscherville from the S. E. The wing at the right is a recent addition. (From photo.)

The front of the cathedral of le Mans (Sarthe) is given here (Fig. 319); for, although much disfigured by the heavy buttresses and higher gable of a later time, it possesses ornamental details of great interest. The central window, especially, with its groups of clustered columns forming either jamb, and its arch of four orders, shows a refinement and delicacy not often met with in the Norman sculpture; although here, as in general, the design consists almost wholly of the

usual geometrical patterns and similar conventional forms, but very cleverly combined with mouldings of slight projection. The original composition of this front must have been one of considerable decorative quality. The city of le Mans may be taken as the southern limit of the Norman school, although beyond the boundaries of Normandy proper.

319—Le Mans (Sarthe): west front of the cathedral. Only the central portion, between the buttresses, can be taken as of the twelfth-century building. The original gable is indicated by the checkered stonework. (From photo.)

The real development of Norman architecture took place in England, to which we must turn for the most important buildings: those which were erected following the invasion.

The conquest of England by the Normans took place not long after that millennial year which was of such importance as a turning point in European history. The larger sense of architectural composition brought in by the invaders was gradually developed among the English, and the century from 1066 to 1166 was fruitful in splendid results. The earliest church of Norman design was, indeed, Westminster Abbey, which had been begun in the reign of Edward the Confessor and was under way when Duke William landed in Kent; but that Romanesque abbey-church has long since disappeared. In the Tower of London is a very interesting chapel, occupying the southeastern corner

of the second and third stories above the cellar of the keep, or White Tower, which was built by William the Conqueror about 1085. This chapel is nearly fifty feet long from east to west and about thirty feet wide between the walls, which at that level have been reduced to about five feet in thickness, from the twelve feet or more of the lower stories. Fig. 320 gives the ground plan of the second story of the keep above the cellar. This is divided simply into two long halls, from only one of which is there any entry to the chapel. The character of the chapel as an architectural design is seen in Fig. 321, in which the south aisle only is shown as it appears to one who enters from the large west hall on the same story, or who ascends by the staircase from the floor below. As the aisle is not wider than the thickness of the wall which bounds it on the outer side, it is evident that such a vault as the one seen in this illustration has not been difficult to maintain, and that in this way its conditions are not those of a true mediæval vault. All the vaulting of the Romanesque churches, as of the Gothic which is of a later time, was carried on under trying conditions. The aisle-walls were, of course, too weak to resist the thrust of a vault. The skill of the builders was not great and their experience of the retaining of vaults by buttresses, or otherwise, was inadequate. The history of church building is that of a continuous series of failures, of collapsing vaults thrusting out the walls which had supported them. It was the triumph of mediæval building, not achieved until the thirteenth century, to retain these vaults by means which should not be too costly

320—Tower of London: second story with the chapel. (From Clark.)

and too wasteful of horizontal space. But in a case like this of S. John's Chapel, as later in the Gothic castles, the vault seems in a curious way out of place as having an entirely unshakable abutment to maintain it. It is mediæval only in appearance, when it is retained by walls as massive as these.

A very early work of the new period is that abbey church of S. Albanus, proto-martyr of England, which church, now used as a cathedral and much altered in the course of centuries, gives its name to the city of S. Albans, lying not far north of London. Fig. 322 shows the central tower of this beautiful church, the south transept and a few bays of the nave nearest the crossing; but the pointed arches seen here and there in the outer walls are of fourteenth century insertion. The building up of the crossing in the form of a square tower was destined to be a characteristic feature of English mediæval churches.

321—Tower of London: south aisle of the chapel. (From Clark.)

Their generally smaller scale, the moderate width alike of the main nave reaching from the crossing to the west tower, and the nave or central hall of the transept, encouraged the building of such towers when the wider span of the continental naves would have made the task much more difficult. Vaulting was, indeed, less freely undertaken by the English builders, and the naves were often left with wooden roofs even when the aisles were vaulted; but

the building of the four great arches at the crossing and the superimposing of walls pierced with arcades was not a matter of great complication—it required merely the employment for a few months longer of the same builders who had turned the nave arches of the interior.

322—St. Albans (Herts): Benedictine abbey church (now cathedral) of S. Albans from S. W. (From photo.)

This crossing of S. Albans, when seen from within, shows the four arches which support the tower: each of that curiously stepped form which we call arches of three orders—that is, of three concentric or successive rings projecting one beyond the other and reaching the full thickness of the wall. Much of the picturesqueness of the Romanesque building depends upon this diminution of the arches toward their lowest ring. Contrasting colours are used in the alternate voussoirs of these arches, a device less common in English architecture than in the south, but not exactly rare even in England. The nave is roofed with a flat wooden ceiling, with slight and ineffective bracketting having a makeshift look. The general aspect of the nave is extremely plain, except where it has been rebuilt in the Gothic style of the thirteenth century. The north aisle also has a wooden ceiling: but the south aisle is in part vaulted in stone—work of the nineteenth

century—and in part closed with a plaster imitation of vaulting. S. Albans Cathedral is interesting as a study, because of the very great length of the nave and choir. This is an effect which was always sought by the English builders; and this large church, though belonging to a convent, and therefore hardly needing a great nave—as the monks worshipped in the choir—is yet glorified in this way, having a nave of thirteen bays, and a length over all of very nearly five hundred feet. The naves of the English cathedrals were narrow: and this may be accounted for by the difficulty of procuring the heavy timber needed for the horizontal bearing beams. No roof of the eleventh century, or even of the twelfth century in good condition, remains in England: but if we turn back to Fig. 270 we can see what such a roof must have been, judging from what is left of its contemporary in France, although the roof of an English church would have been of steeper pitch. It was always the custom to use one post in the middle of the bearing beam, as seen in the hall of Oakham Castle, illustrated in this chapter (Fig. 334). There is nothing scientific about such a truss: the huge horizontal beam acts merely as a bearing member, a sort of lintel, as does also the horizontal beam in Fig. 270. But an oak forest in the north of Europe does not afford many long sticks: even thirty feet is an unusual length for heavy oak timbers: the English oak does not grow with a high and straight trunk and this fact may have prevented wide naves.

There was, moreover, a scarcity of resources at almost any one time in the history of almost any English see, or monastery; and a church would be undertaken with a narrow nave and low in proportion, and then this church would be added to in length, bay after bay, for many years. It is easy to understand that this tendency once fairly accepted, and its results found not unpleasing in their combination of very great length of nave with moderate height and width, was allowed to prevail.

At about the same time was built the very interesting church at Southwell, north-east of Nottingham, known as Southwell Minster,[8] but which has been a cathedral for many years. Fig. 323 is the exterior seen from the north-west, and the square towers flanking the

[8] The word Minster is equivalent to the German Münster, and the French Église Abbatiale or Église Collégiale. The term is properly applied to conventual churches, and to those which, without having a bishop's chair (and therefore not cathedrals) are managed by a body of Canons, not belonging to a monastic order. Southwell is one of the latter class.

west front are an interesting reminiscence of the churches along the Rhine, as described in Chapter IV of this Book. The central tower, though not equal in beauty to that of S. Albans, is still attractive. The marked peculiarity of the church is its good preservation, and by English writers much stress is laid upon the excellent quality of the

323—Southwell (Notts): collegiate church (now cathedral) from N. W. (From photo.)

stone used for the church. The solid parapet of the tower and the pinnacles are modern.

The interior is fortunate in having escaped destructive restoration. It is probable that no great Romanesque church in England has been so little injured by modern handling. Its general character is not unlike that of the Romanesque interiors given below: Peterboro' and Norwich.

The transepts of Winchester Cathedral are nearly intact, at least in their style, but they lose their intended effect by contrast with the enormous mass of the cathedral—the longest and probably the largest church of the Middle Ages in Great Britain. The tower is also of good Romanesque design, though it has been much restored. As it stands, and in comparison with the enormous nave of the church, it is plain, unduly simple, and it cannot be doubted that the church would be greatly benefited by a tower as lofty as that of Ely. Such criticism, if aimed at the work of any one designer, one bishop, one period of the work, would be obviously unfair; it is only as a comment upon the building as it exists—a congeries of many succeeding styles never brought under a single overruling control—and as a suggestion to the student, that such a description is justifiable. It is, however, necessary to insist upon the fact that in England there is no such thing as a Romanesque church remaining, as a complete design, except the little chapel in the Tower of London. It is too much to say, as has been said by English writers, that the interest to be found in the Romanesque remains of England is "rather archæological than architectural," this remark meaning, of course, that no consistent architectural effect is obtainable from what remains there of Romanesque architecture. There is still architectural interest to be got from some of the interiors such as those shown in the illustrations of the present chapter, but nowhere are we safe in judging the intent of the Anglo-Norman designer. We have no interior, with nave-arcade, triforium, clearstory and visible roof—we have no exterior with choir and transept, or nave and transept, combined with central tower, of the same or closely succeeding epochs and to be judged as one design.

At Ely in Cambridgeshire, the transept and the north aisle of the nave are in excellent condition and the whole south wall of the choir as seen from without shows an admirable succession of grouped round arches similar to those spoken of below in the discussion of the choir of Peterboro'. It is probable, indeed, that they were built or modified in view of that Peterboro' clearstory, for there is no doubt that the south side of the choir was, in the eighteenth century, built up with large windows filled with perpendicular tracery, and that all the present Romanesque structure is of nineteenth century work. It is as a reminiscence of the original design that this flank must be considered to-day. The great tower is not placed above the crossing of the transept, but is at the west end, and would be the west tower in the usual sense, but that the

later Galilee porch projects westward from it. It was intended at the close of the twelfth century to make this western extension even larger than it is, and at the same time the south-west transept was built as shown in Fig. 324. The intention was to build a full transept with two arms, and this would hardly have been undertaken but for the further intention to prolong the nave westward.

Fig. 324 shows the south flank of Ely Cathedral as it stood about 1870. On the right is seen the south transept with its very interesting Romanesque ordonnance, not adequately displayed, and its later round-arched flanking buttresses. Above this is seen the curious

324—Ely (Camb): cathedral from south. (See 325.) (From photo.)

octagon lantern, which is late Gothic, and rests upon a wooden substructure, as described in Vol. III. The south flank of the nave is seen, with the Monks' Door indicated by the plank walk which leads to it, and the stone wall on the left of this is a vestige of the ancient cloister. The round-arched clearstory wall is modern Romanesque, built as a faithful study of the existing early work and replacing the late Gothic windows which remained in this place until about 1850. The aisle windows are of different late dates, and have not been replaced in modern times. On the left is seen the west tower with the curious south-west transept projecting from it, and projecting from that again and eastward the apse of S. Katherine's Chapel. This tower is of a Transitional date—that is, of the passing of the Roman-

esque into the Gothic style—about 1190, and the large octagonal turrets which flank the south-west transept are apparently of the same date, as is also the narrow wall between them. The crowning story of the great tower is, however, of the fourteenth century, and replaces what was undoubtedly a blunt spire, probably of wood.

The reader should endeavor to form a conception of the probable effect of that great tower before the barbarous addition of the fourteenth century lantern. This involves no changes except the removal of the great octagon and the tall pinnacle-shafts which flank it on the four corners. In their place we should try to imagine the plainest octagonal pyramid rising above the existing twelfth century walling, much like the central spire of the church at S. Martin-de-Boscherville (Fig. 318).

325—Prior's door at Ely. (See 324.) (From photo.)

One detail remains to be considered, and that is the admirable priory door opening into the south aisle from what was once the cloister. Fig. 325 shows this porch as it was before restoration, the photograph having been taken about 1860; but in this case at least the restoration has done little mischief, and even the minute comparison of this photograph with the present condition of the work fails to show injury done to the sculptures. The new and smooth planking of the door, the wrought-iron strap-hinges, and the stone door-sill, together with the fresh pointing of the stone wall adjoining the door, alone indicate the work of the restorer; and it is well to be able to render this testimony to the authentic character of much of the restored Romanesque work of Ely.

Peterboro' Cathedral, begun by the building of the apse, about 1120, is indeed later than these churches; but more ample means and a more ambitious control were added to the somewhat more advanced epoch, to produce an impressive architectural effect. Nothing of the Romanesque architecture in England is quite as fine as the east end, the rounded apse, of Peterboro'. This feature is shown, with the

326—Peterborough (Northampton): Benedictine church (now cathedral) from S. E. (See 327.) (From photo.)

square central tower, in Fig. 326. It is most unfortunate that great fourteenth century windows have been cut through the delicate arcading of the apse and that still later tracery has been filled into the round-headed windows of the choir; but the general mass and the arcading remain. Nothing more delicate, nothing more calculated to impress the spectator, was ever achieved by Romanesque architecture than the division of the choir into four great bays and the filling of each bay on the outside with a triple arcade perfectly proportioned, each threefold group in itself and with its neighbours. The pinnacles are thirteenth century work, and the tower is also of the Gothic period. The interior of the church is even more impressive, relatively speaking,

than the outside, and is probably the finest early interior in England (see Fig. 327). It is only in the upper windows that late Gothic tracery is seen to interfere with the dignified reserve of the round-arched style. Even the large pointed arch which forms the eastern side of the square crossing and helps to support the tower, is of but slight divergence from the general style—for the Romanesque builders never avoided the pointed arch altogether; and the Norman arches are so finely moulded that the correspondence is close. Peterboro', best known by its extraordinary west front with the lofty triple arcade which excites such general admiration, is still more important as a monument of the latest English Romanesque style.

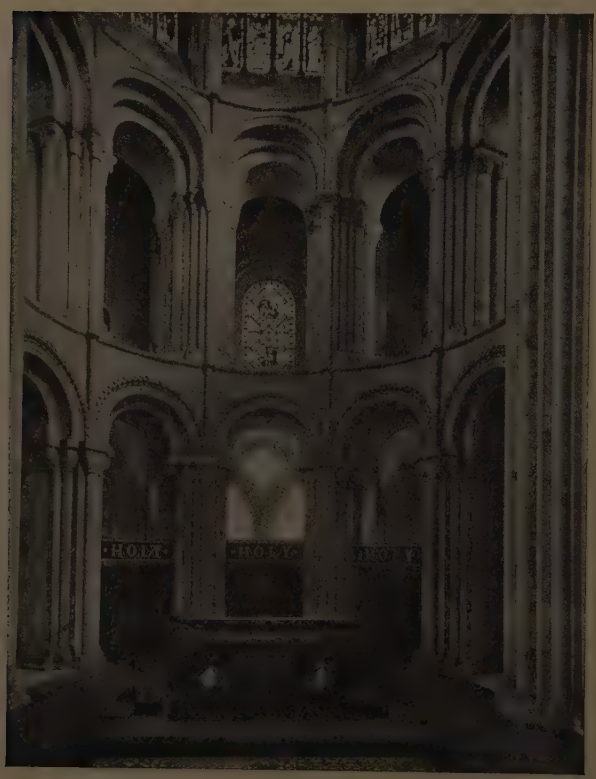
The Romanesque of Norwich Cathedral is largely confined to the interior. Fig. 328 gives the beautiful apse as seen from the choir, and this, although restored at different periods, is still of the original

327—Interior of Peterborough looking toward western front. (See 326.) (From photo.)

design and extremely beautiful and refined in composition. Unfortunately the Romanesque work stops with the sill of the clearstory windows at the top of the picture. The ring of arches between the sanctuary and the ambulatory, and the second ring of arches of the triforium, are so light and fine that although they are purely Romanesque they lead up to the late Gothic clearstory without too great a

shock of change; but we have to regret the loss of what cannot be replaced—the original clearstory wall and openings.

The nave of Norwich also is Romanesque. The double row of arches, aisle and gallery above the aisle, are nearly like those seen in the apse, Fig. 328, and remind the spectator of the arrangement at Tournai Cathedral, Fig. 362. The nave is more fortunate than the apse in having preserved something of the original arrangement of the clearstory windows; but the vaulting is elaborate late Gothic work, and, in the nave as in the apse, the Romanesque church stops with the second arcade.



328—Norwich (Norfolk) cathedral: interior of east end. (From photo.)

Another great loss has been in the chapel of S. Luke, in plan a double cylinder, the two large rounded surfaces divided by a small round tower in a way reminding us of the church of the Apostles at Cologne. This chapel rounds out of the ambulatory on the north side, and forms, therefore, the extreme north-eastern corner of the church. It is still Romanesque and still more attractive in the order of its three superimposed arcades, but the original Romanesque work had been replaced largely by fourteenth century Gothic, and this was all removed about 1860 and modern Romanesque details copied from other parts of the cathedral were substituted. It is no longer a valuable study.

The north transept has retained much of its earlier character, especially in the north face, the gable wall, which has a small doorway

of entrance, and is a very characteristic design. The tower also is Romanesque, but of a very inferior design, having all the clumsiness of twelfth century work without its primitive charm. It is fair to notice, however, that the stonework was recut in the course of the nineteenth century, when probably much new work was inserted.

The beautiful nave of Gloucester Cathedral shown in Fig. 329, was remarkable, before the alterations, for its extreme severity of design. It shows the style reduced to its simplest terms. Great cylindrical pillars carry the nave arches which themselves are semi-

329—Gloucester (Gloucester) cathedral: nave, looking west. (From photo.)

circular, with hardly any stilt, and which carry a triforium so low and so unpretending that it is little more than a passageway for the service of the church. Above this, the clearstory windows are still round-arched, but they are masked by a Gothic vault. It appears that, when the vaulting was put up, about 1250, the clearstory was largely rebuilt, the necessity of this coming from a fire fifty years before, which had injured the stonework. It follows that the original Romanesque nave is to be seen only as far up as the top of the triforium arches. The reader is reminded that these Romanesque churches were not

vaulted in England with anything like the universality of Continental work. Neither in this nor in later times did it become an almost universal rule in England that a church of any consequence should be roofed in stone. The Gloucester nave would be really more interesting and even more beautiful to us to-day if the clearstory wall with its not very large, round-headed windows had been left undisturbed to the very wall plate of a wooden roof, and if that roof were seen spanning the nave. Then could be seen the admirable composition of a high and heavy nave-arcade, a large and high clearstory, and a very small and delicate triforium arcade between them, giving a proportion, from floor to flat roof, of nearly 10:2:5.

The simplicity of the church is in its general design alone. The small details are rather more rich than usual if we ignore the absence of representative sculpture. There is no plant form nor animal form in the Romanesque work, but this array of zigzags and sequence of mouldings is effective.

330—Oxford (Oxford): Benedictine priory church (now cathedral): detail of the nave. (From Ox. H.)

The choir is in a very curious condition, for the Romanesque arcades of the lower story and of a large gallery above it remain, and are still plainly visible through a screen of late Gothic work (fourteenth century) too rich and splendid for modern restorers to remove, and which moreover, has concealed or replaced all the architectu al features—the engaged columns, the capitals, the set of arches in different "orders" and the sculpture, which the Norman architects left. On this account, no restorer, no renovator in search of original design, has dared to remove this florid and wholly inappropriate masking.

The church of S. Mary the Virgin in Oxford was more often considered as the chapel of Christ Church College than as a cathedral. It was but little thought of during the centuries of Oxford's fame, and since the renown of it as the cathedral of Oxford has grown, it

has been much studied as a monument, and most carefully handled. As late as 1850 the church was in a forlorn condition, and although the bishop's chair was even then in place, the church was hardly used except as the college chapel.

The Romanesque features of the church are the exterior of the north transept and the aisle windows of the choir, and of other parts of the church. In the interior, the nave proper and the nave of the choir alike are Romanesque, at least as to their lower portion, but more decorative than common in eleventh and twelfth century work; and the north transept also has beautiful Romanesque details. The piers are made up of engaged and half-round columns; or in other cases, of full round columns with corbels projecting from the east and west sides of the shafts, with round arches springing from the corbels and carrying a tympanum or thin screen wall beneath the main semi-circular nave arches. This comes of an alteration in the church which it is not now possible to date. The resulting effect is shown in Fig. 330.

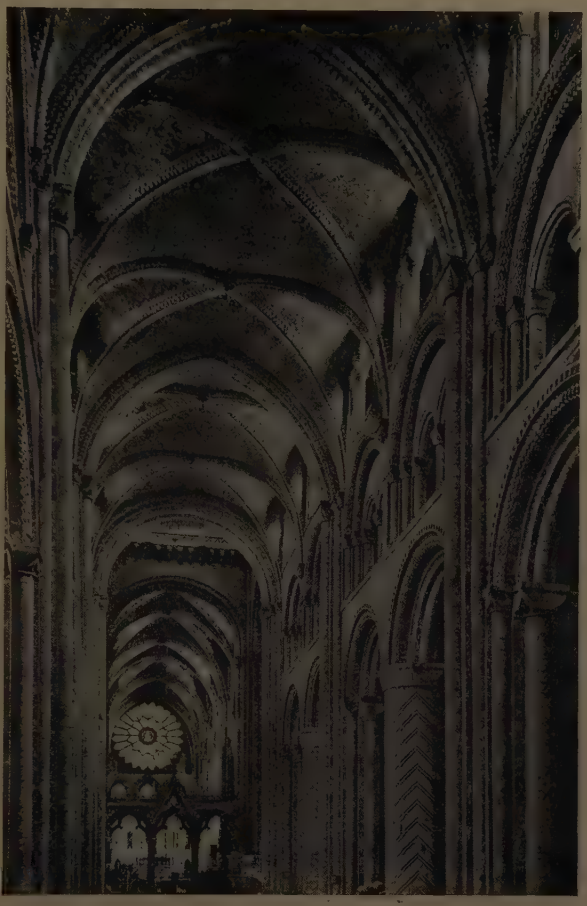
The Romanesque architecture of Lincoln Cathedral has the singular effect of injuring greatly its general charm. We have occasion in another chapter to speak of the remarkable beauty of Lincoln considered as a Gothic church—its well-balanced and well-distributed system of decoration; but the round-arched work, which has been allowed to remain, mars the church by causing the retaining of a wholly flat and uniform wall masking the whole west front. It is true that the details spread over this broad wall are mainly pointed, of the thirteenth century, and that the round arches remain only in the central doorway, in the two smaller doorways and their enclosing outer porches, together with two still smaller archways, now crowning niches only. This group of five low, round-headed openings and two higher ones is in itself very attractive, and the details are full of interest; nor is it doubtful that a whole front built on these lines was interesting in the extreme; but the significance of the west front is lost by the broad smooth wall which hides nave and aisles alike and dwarfs even the towers as seen from the west. It is on record that the Romanesque front had three gables, but their exact height and character are not known.

The cathedral of Durham was begun at a time not later than Norwich or Lincoln or the transepts of Ely, but it was carried on in a continuous, vigorous fashion from 1099 for about thirty years. In this way it was a Romanesque church of very great consequence, and

was carried far toward completion. Of this church there remain admirable fragments of the exterior. Thus, Fig. 331 shows the north transept and a part of the nave very nearly as they must have been early in the twelfth century. The great tower is, of course, two centuries later, and the building at the extreme left of the picture is modern, the rebuilt north end of that interesting transept which is known as the "Chapel of the Nine Altars." There is evidence that the Romanesque church had a round apse at the east end, projecting boldly by at least a full half circle, and that the aisles were furnished with semicircular tribunes of a form not perfectly understood. All that original east end was swept away about 1250, and in place of it was built a continuous transept-like building corresponding closely to the western transept begun and never finished at Ely. In either case we have to imagine, for the builders of these exceptional edifices, either a disposition to break away from the usual arrangement of a church and to build, the one at Ely a narthex, the other a transept of basilica-like type, that is, a complete T-shaped eastern termination of his work; or else a determination

331—Durham (Durham): Benedictine abbey church (now cathedral) from N. W.; north transept on the left. See 332 and 335. (From photo.)

to build his church at Durham longer than in the original plan and to start this addition to his nave by a transept which should mark the beginning of the new work. The extreme clumsiness of the plan ought to deceive no one. It surprises a student of church planning, and that disagreeably, to see that eastern termination repeated by the western projection of the Galilee Porch, and these unusual features combined with such an irregularity as a transept with an eastern aisle and without a western aisle to correspond. In the effect of the exterior no such violent shock is given; and in the interior, of course, the student may ignore those peculiarities, taking the long-drawn church as it presents itself to him and considering one group or series of arcades at a time. It is in general a tendency of the English cathedrals to be studied in this way in detail. Almost never is there the same general effect produced as by the presence of a great Continental church, because these last, the French cathedrals, and those of northern Spain, western Germany, and Belgium, stand in the cities, rise high above the houses, and tell as the central feature of the whole diversified human encampment. Even the Romanesque city church, less lofty than a thirteenth century or fourteenth century Gothic building, rises into prominence in comparison with the dwellings of the city, whereas in England the low and



332—Nave of Durham looking east. See 331. (From photo.)

long structure of frequently changing design, partly lost among trees and seen at intervals and from certain points of view alone, tells rather as a series of pleasant surprises than as a single overpowering impression.

It is claimed for Durham that the ribbed vault of the nave is as early at least as any ribbed vaulting known, that is to say, the common assertion that the Gothic vaulting, and with it the Gothic style, began in France about 1160 is controverted by those writers who hold that the innovation occurred as early in England, at least, as in France, and that the place of this innovation is Durham. The vaults of which this assertion is made are shown in Fig. 332, which gives the great nave as seen when looking toward the east. That claim is as yet disputed; but of unquestioned importance is this magnificent Romanesque nave, more highly organized than the nave of Lincoln or Norwich or Gloucester, in that each pair of bays is grouped into one larger bay by the presence of the great groups of vaulting shafts carried up from the floor to the springing of the vaults and dividing the roof into double vaulting squares—an arrangement which has been preserved throughout. Even if the vault is not of the original design, if it belongs to a later period than the great triforium immediately below it, still the lunettes of the clearstory have not been marred by the insertion of the vaulting, and we have in the nave of Durham the nearest approach to a perfect Romanesque interior that the British Isles can furnish. The ornamentation remains severely Romanesque. There is no floral sculpture, no animal form introduced; everything is formal and geometrical, zigzags or billets affording the contrast of light and shade which the mouldings seem to require, and the great piers themselves, fluted, reeded, or patterned with spiral lines in the determination to produce variety in spite of a rigidly severe ordonnance of architectural parts.

There is no Romanesque church in the British Isles which can be studied as a single independent design complete or nearly complete in itself and revealing the intention of the first builders. The only round-arched buildings of one period, which are also free from destructive restoration, are the ruined abbeys of Yorkshire and those of Scotland. Even these abbeys are commonly of the Transition, of the years during which the so-called Early English style was succeeding the round-arched Romanesque.

Kirkstall Abbey in Yorkshire, about four miles from Leeds, was

built entirely in the twelfth century and it is, moreover, one of the two or three most nearly complete of the ruined abbeys, so that it furnishes on the whole the best existing example of a Romanesque church in the island. The large windows had been filled with late Gothic tracery. In the walls of the tower new windows with segmental arches were put in, and these had late tracery filling, and certain pinnacles of the west and north gables are of the Gothic period, all of which are seen in Fig. 333. In no part of the work is there much elaboration of stone-cutting or much sculpture, but all is well and thoroughly built of solid

333—Kirkstall (Yorks): Cistercian abbey church from N. W. (From photo.)

sandstone. The interior is less perfectly Romanesque. The arches of the nave are pointed, and the ordering of moulding is entirely consistent with the early English style of 1190 to 1220. There is no trace of vaulting in the nave, and indeed it is probable that none was ever attempted, but the great arches of the crossing which once supported the tower can still be made out. The choir is filled with thirteenth century Gothic ribbed vaulting.

A country very thickly populated, with active industries and sufficiently prosperous, is not a favorable place for the preservation of architectural antiquities. Either the old buildings are taken to pieces that their materials may be used for new work, or they are put into good order and made new, spick and span, to the destruction of their original

character. So it is that in England no Romanesque church remains in any perfection as an unaltered building of the eleventh or even of the first half of the twelfth century. Moreover, if this is true of churches it is still more true of dwellings, for only the great keep of an ancient castle is likely to remain erect, and the interior arrangement of that, the rooms of residence, are the first to be repaired and restored out of their original character.

The hall of Oakham Castle in Rutlandshire is probably the most perfect, by much, of all the civic or domestic buildings remaining to us.

334—Oakham (Rutlands) Castle: interior of the hall. (From Parker.)

Its date is apparently of the Transition—of the years after 1160, when the ribbed vault and the pointed arch were already in use in those lands where Gothic architecture was to take its rise. Fig. 334 shows the interior of the great hall, which building is complete in itself, and is now in use as the Town Hall, at least at certain times—the assize courts being held there. The plan, which is given in Parker's work on the domestic architecture of England,[9] shows a building 42 feet wide by 64 feet long with the entrance doors placed without

[9] Some Account of Domestic Architecture in England. Three volumes in four, of which the first, dated 1851, is stated to be by T. Hudson Turner (d. 1852), the others by the editor of the Glossary of Architecture, viz., John Henry Parker.

reference to the axes of the building, a peculiarity very common to domestic buildings of the Middle Ages, and having coupled windows, each finished with a pointed arch. The roof is broken so as to leave a slight wall in the place of a clearstory wall where the arcade carries a superstructure seen in the figure; but, as is also seen, there are no

335—Durham (Durham): galilee of cathedral. See 331. (From Eu. A.)

windows in it; it is a mere piece of walling interposed between the nave roof, which is independent, and the aisle roofs, which have a different slope and are simply shed roofs leaning against the high wall. The large room was evidently very dark, being lighted by small windows, very near the ground. To be compared with this is the Galilee Chapel

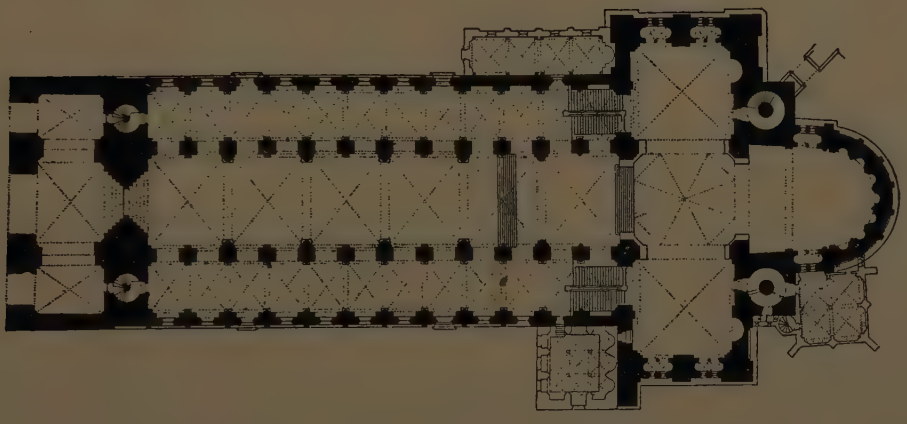
of Durham Cathedral (see Fig. 335), of which the story is that it was built at a later period in order that women might have some access to the conventual church, the principal part of which they were not allowed to enter—this being a rule of S. Cuthbert's foundation. Its dimensions are 47 by 76 feet, and it is divided by three rows of columns and arches—four columns in each row. Its position at the west end of the nave corresponds exactly to the narthex of the eastern churches, which narthex was also used as the place of worship of those who might not enter the nave itself.

On the whole, the most interesting part of English Romanesque architecture is that found in the great square towers which belong to the style and are characteristic of it. They are most commonly central towers, and one of the finest which remain for our study is that of the abbey church at Tewksbury (Gloucester), which is shown in the photograph, Fig. 336. The church was erected in the early years of the twelfth century, but was largely rebuilt at later times, so that the only feature of interest, which this view has to show to the student of Romanesque, is that great central lantern at the crossing. This tower, however, may be taken as a complete example of the period—with the exception of the battlemented parapet and the pinnacles at the four corners—and is unquestionably the finest example in England. It may be thought to show, more strongly than usual, a Norman origin in the arrangement of the three stories of arcades with their great variation in the widths and placing of the openings, and especially in the greater elaboration of ornament.

CHAPTER IV

LATER ROMANESQUE: GERMANY

THE architecture with which this chapter is concerned is of the school commonly known as the Rhenish; having its source and greatest development along the valley of the Rhine, and in the neighboring territory. This district may be taken as including all that country which lies along the north-easterly boundary of what is now France, and which is designated as No. 2 on the map page 311. It thus extends westward so far as to include the states of Belgium and Luxemburg and the old provinces of Alsace and



337—Speyer (Rhenish Bavaria): plan of cathedral. See 338 to 342. (From Handbuch.)

Lorraine; and to the south to meet the influences of the Lombard school in Switzerland, Savoy, and the Dauphiné (No. 6). Of all the styles of the western Romanesque which owed their origin to the adoption of the vault in place of the wooden roof of the early basilica, the Rhenish was the latest in development. The cathedrals of Speyer and of Mainz were perhaps the first of the completely vaulted German

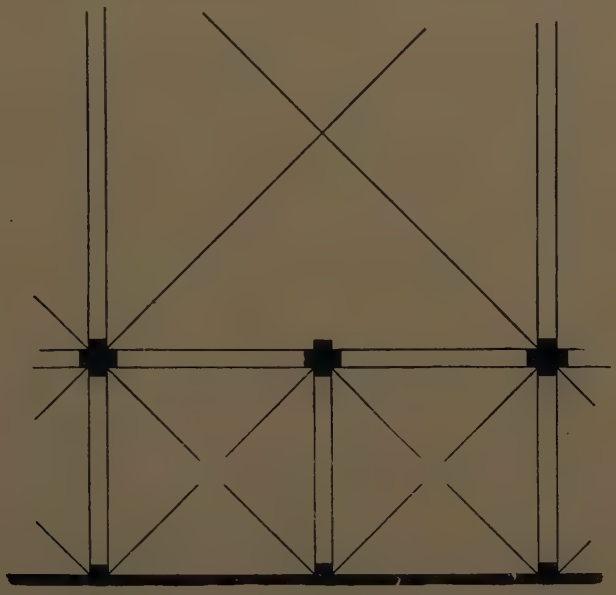
churches, and they were just about contemporary with the earliest of the Cluniac edifices; dating, that is, from the latter part of the eleventh century (see Chapter II, page 345 ff.). Taking its start, then, at the same time as the Burgundian style, the Rhenish school made much slower progress: the German builders appear to have shown, at the start, less ability to apply the new principles of construction. Moreover, the earlier vaults were unstable, and it soon became necessary to rebuild them, so that it was not until the twelfth century was well

338—Speyer cathedral: longitudinal section. See 337 to 342. (From Handbuch.)

339—Speyer cathedral: cross section. (From Handbuch.)

advanced that the vaulted nave became common; and the German architects were still erecting buildings that were purely Romanesque as late as the thirteenth century, at a time when other districts saw the Gothic architecture firmly established. So that we may take the development of German Romanesque, as we know it, at about the middle of the twelfth century, at which time the cathedrals of Speyer and Mainz were being rebuilt.

But if the German builders were backward in developing their style of building, they finally achieved results which, at least in point of construction, were unequalled, even by any of the schools of France. Like the Burgundians, they, from the first, remained faithful to the idea of the directly-lighted nave, and retained the general design of the basilica with its clearstory. Apparently not as influenced as the Burgundians were, by the architecture of Poitou and Auvergne, the Rhine builders lost no time in experimenting with the barrel vault, but adopted at once the groined vault; and this modified, in a manner



340—Diagram of groined vaulting as in Speyer cathedral (337) and other Rhenish churches. Compare with 341.

similar to that which we have seen at Vézelay, by giving it a rise toward the crown. And the Germans went even farther than the architect of that Cluniac church: they divided the nave into square bays, and greatly increased the crowning-up of each nave vault, so that the nave roof became a series of dome-like structures with greatly increased stability, and producing a wonderfully effective interior. In this way the Rhine builders came nearer than any, previous to the Gothic era, to a logical solution of a vaulted nave combined with the clearstory; surpassing the Burgundians in the scientific disposition of the structural parts to resist the lateral thrusts and maintain the equilibrium of the lofty nave roof. For we have seen (Chapter II) that the Burgundian

341—Speyer cathedral: upper part of nave, showing the groined vaulting.
(From photo.)

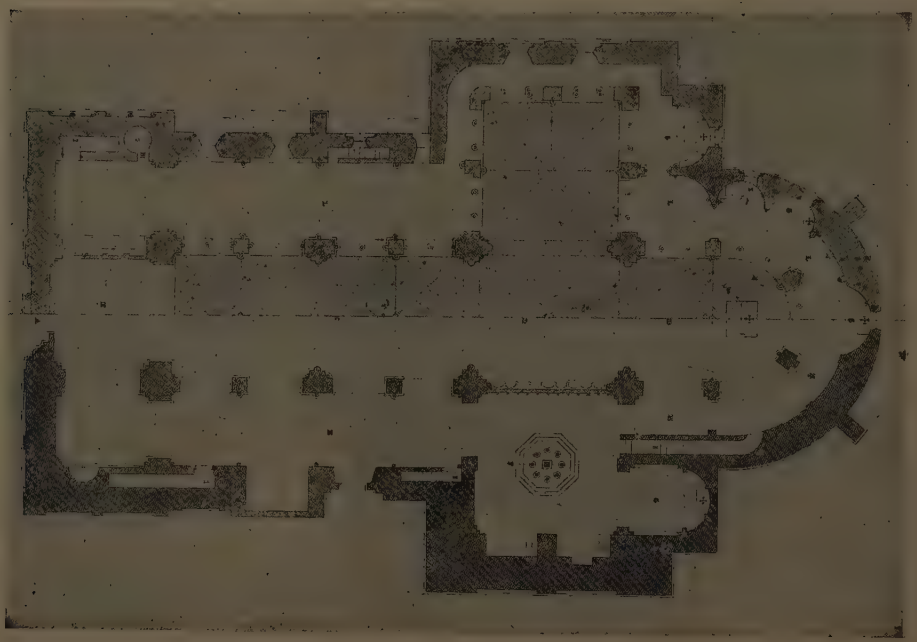
342—Speyer cathedral from the south: the east end.
(From photo.)

vaults were, as a rule, soon rebuilt or strengthened by the addition of flying buttresses; whereas the German territory exhibits a beautiful series of Romanesque churches standing substantially as they were built in the twelfth and the early part of the thirteenth centuries.

The vaulting system can be well studied from the cathedral at Speyer, a typical, as well as beautiful, specimen of this architecture.

343—Limburg (Rhenish Bavaria): cross and longitudinal sections of abbey church. (From Handbuch.)

This cathedral church, as it now exists, dates chiefly from the first half of the twelfth century, and although it has suffered from damage by fire at various times, and by the consequent repairing, it may be taken as a fair example of the Rhenish church of that date. Fig. 337 gives its plan, which shows the disposition of the vaulting bays to be decidedly different from that of the French churches treated in Chapter II. Another difference is seen in this plan—the alternation of the piers;

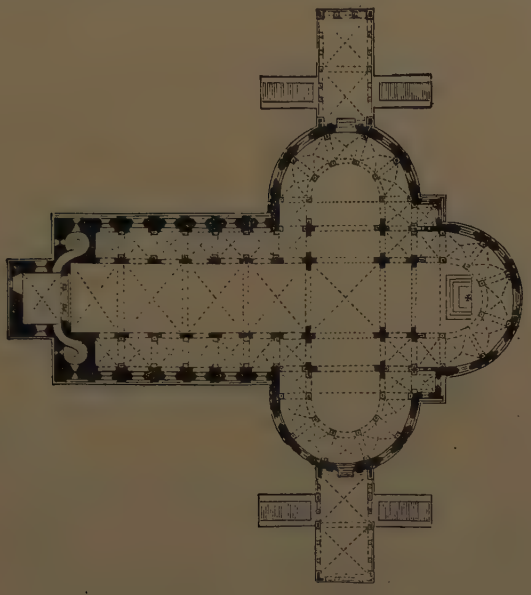


344—Limburg-on-the-Lahn (Hesse-Nassau): the cathedral. On the right, half-plan of ground floor; on the left, half-plan at level of the galleries. (From Moller.)

every second pier having an additional or pilaster-like projection on the nave side, making those alternate piers much heavier in their mass than the piers between them. This arrangement is to be compared with S. Ambrogio in Milan, S. Zeno in Verona, and S. Miniato near Florence, as treated in Chapter I. Each pair of these larger piers carries, sprung across the width of the nave, a transverse arch of simple square section, which arch springs on either side from the capital of a vaulting-shaft which is itself an engaged column of a nearly semicircular plan. In this way the nave is divided into six vaulting-squares, and the smaller piers, between those which carry the transverse arches, are without connection with the vaulting of the nave; see Fig. 338, in which the longitudi-

345—Limburg-on-the-Lahn: east end of the cathedral. See 344. (From photo.)

nal section of the church is indicated. These smaller piers, however, are, as regards the aisle, of exactly the same importance as the larger piers, for the aisle is divided up into twice as many vaulting-squares as the nave, so that the small and light transverse arches there have their own vaulting-shafts attached to all the piers of the arcade and corresponding shafts built into the outer wall of the church between the windows. This change, in the scheme of a basilica-like church, from the round column to the generally square and more or less elaborate pier, is the most important single modification of the Christian church between the earliest ages and the eleventh



346—Cologne: plan of S. Maria im Capitol. See 347.

century. It took place very gradually, the cause of it being evidently the accessibility of material of a certain class and character: stone sufficiently hard and durable to build the walls and large piers with, but unfit for shafts and capitals of columns; and workmen not accustomed to such delicate stone-cutting as the classical column required. In this matter of the skill of the stone-cutter and stone-setter, the cross section of Speyer cathedral (Fig. 339) is instructive. It is well seen there, for the piers, about eight feet square without counting the half-round vaulting-shafts, are built up exactly as a solid stone wall would be built, the fairer and harder stone used for the exterior facing and smaller stone of the same quarry beds for the vaulting.

Arches five feet thick spring from pier to pier and along the aisle, and carry a wall of the same thickness which rises to the top and takes the roof timbers. The vaulting-shafts come to an end at three-quarters of the height of the interior on the nave side, and from their capitals spring the transverse arches of the nave. The round arches seen in the longitudinal section springing from pier to pier along the clearstory wall, are of practically the same size and character in all respects as the transverse arches, although they are engaged in the clearstory wall for the greater part of their height and thickness. In this way each

347—Nave of S. Maria im Capitol. See 346. (From photo.)

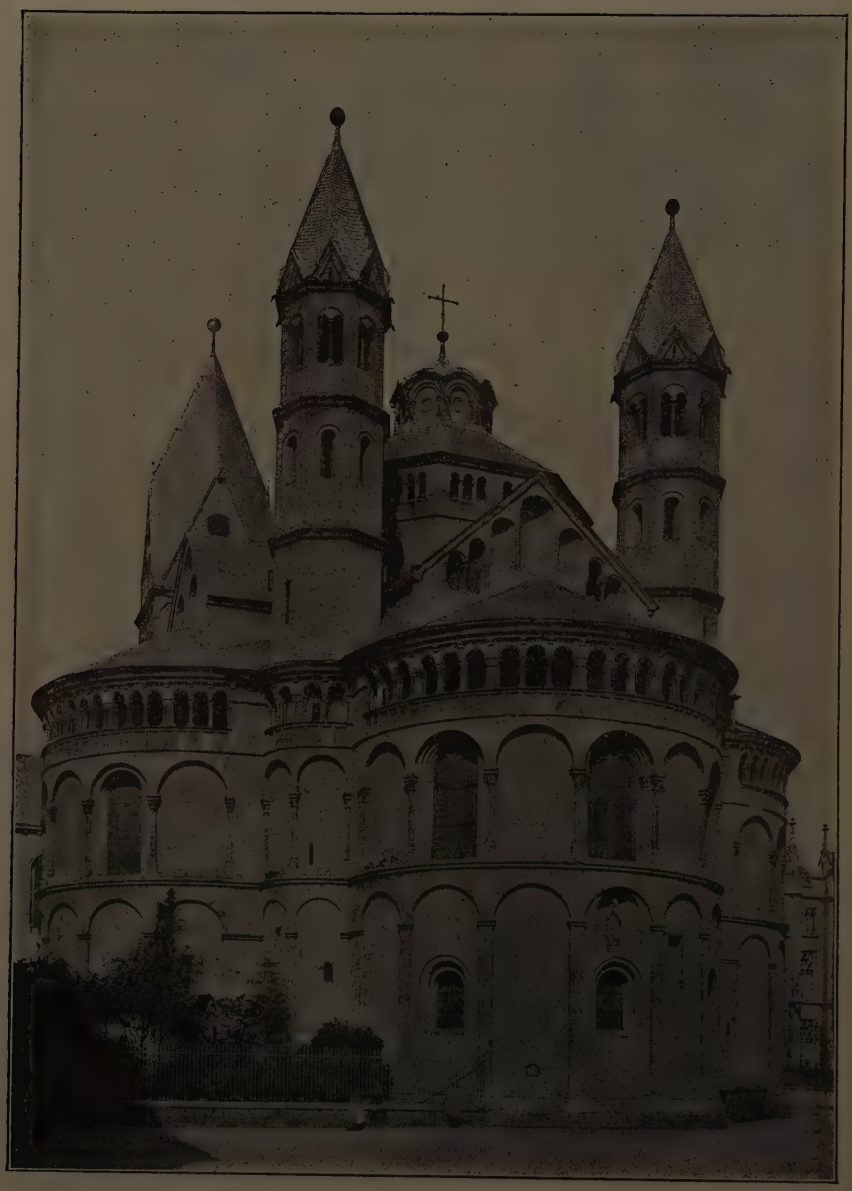
vaulting-square of the nave is constituted,—the whole horizontal space within the outline formed by these four arches being roofed with stone vaulting of the groined type. This is explained more in detail by the diagram, Fig. 340. Here the great square is one of the vaulting-squares of the nave and the small ones are those of the aisle; a system which requires the aisle to be just half the width of the nave at the level of the springing of the arches, which must therefore be humoured or brought into shape by vaulting-shafts or corbels or similar devices to correct any irregularity of the plan and leave to the builders mathematically accurate squares for their vaulting.

Fig. 341 is a photographic view of this nave of Speyer Cathedral, but the reader will note that the stripes which mark the groins so very decidedly are painted bands only; they do not argue the existence of ribs or of any constructive device whatever. The groin in such a vault is merely an arris forming a solid angle produced by the meeting

348—Cologne: S. Martin from the N. W. (From photo.)

of two concave surfaces. This interior is so completely modernized and so defaced by the permanent seats that the roof only retains its original appearance.

The exterior of such a large Romanesque church is well exemplified by this same cathedral of Speyer. As it now exists, it is not in all respects the exterior first proposed by the builders; and yet the tendency



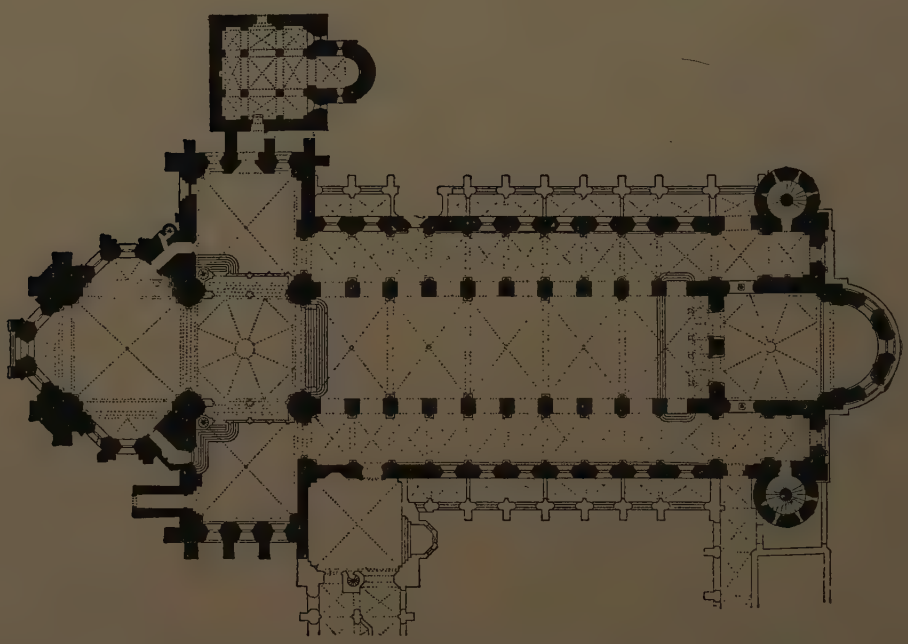
349—Cologne: church of the Holy Apostles; east end. (From App. of Arch.)

visible even as early as the eleventh century was toward just such a system of design and such a combination of the important parts which make up a great church. The view of Mainz Cathedral, on page 403, shows the whole nave of such a cathedral church with the double system of transepts, the two towers built above the two crossings, the minor towers flanking the apse, or the west front, or both, and the

350—Cologne; collegiate church of S. Gereon; the east end. (From photo.)

complicated system of roofs. Of Speyer, however, the eastern end with the very interesting arcading of the flank walls and the transept; the similar arcading in four tiers of the square towers at the choir; and the general design of the square towers themselves, so evidently built for artistic purposes alone and intended to give to the church that upward-pointing look which the long horizontal roof would seem to contradict—all these are shown in the photograph, Fig. 342.

The basilica-like church of the Abbey of Limburg, in the Hardt district of the Palatinate, and north-west of Speyer on the Rhine, is much ruined. Fig. 343 shows its cross and longitudinal sections as restored by the care of Mr. Hasak for the great German Handbuch. The capitals of the columns were evidently newly-cut, especially adapted to their task of carrying the two arches which spring from each one, needing no super-capital. It is interesting to see the ready abandonment of the super-capital in a case where shaft and capital



351—Mainz: plan of cathedral. See 352, 353. (From Handbuch.)

were cut for their destination. This work is assumed to be of 1030 A.D.

The cathedral church of S. George at Limburg-on-the-Lahn should be compared with that of Tournai, from the great importance given in each case to the gallery. In the German as in the Belgian church this upper aisle, or upper story of the aisle, is of importance comparable to the aisle on the ground floor. The tribunes of Notre Dame in Paris are of a similar disposition, so rare in the churches of the west. Fig. 344 gives the half-plan on the ground floor and the half-plan at the level of the galleries of the Limburg church. This church is cruciform with square ends to the transept and a round

apse, in which apse, however, a semblance of an octagonal arrangement has changed the aspect of the choir within. The presence of pointed arches suggests its late date, for it is almost wholly of the thirteenth century; but there is no evidence of Gothic style in the exterior except this of pointed arches in a plain wall.

Fig. 345 shows the east end of this most interesting church, seen on its height, towering over the little river with its water-mills and

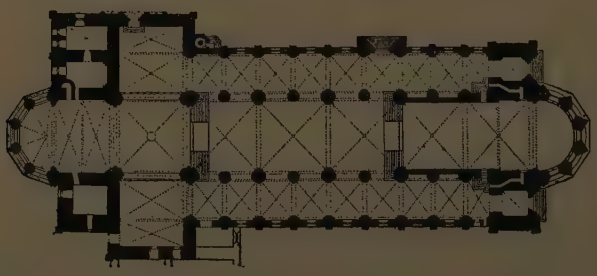
352—Mainz: cathedral from S. W. (From photo.)

flanked by fifteenth century dwelling-houses, which crowd it in reality less than they seem to do in the picture.

The church of Santa Maria im Capitol at Cologne has the most interesting plan of any of these Rhenish Romanesque churches, and its design within and without has retained perfectly well the original character, at least in the larger dispositions. The plan, Fig. 346, is a straight nave and aisles ending in a triple apsidal disposition enclosing a large crossing; in other words, it is furnished with a transept having two apses, which are exactly of the same size as the eastern

apse. This trilobal disposition seems a most natural and a most fortunate one for a Romanesque church. It was used in great perfection in the cathedral at Tournai in Belgium (see below, Fig. 361), and its great culmination may be found in the cathedral of Florence (Vol. III). Take that arrangement of three semicircular tribunes, build square towers at the meeting-points of the curved walls, and again at the meeting of the nave walls with the northern and southern apses, and you have a faultless plan, the interior and exterior culminating in a most stately way, at a point reasonably distant from the entrance doorways at the west. Fig. 347 shows the interior of the nave looking east, and there are seen the eastern apse and the crossing indicated by the great height of the arches which enclose it on four sides, and covered by a cupola, with the beginnings of the northern and southern apses. The vaulting of the nave is much more recent; but the vaulting-shafts engaged in the wall are original or in the original places, and the plain square piers are those of the early church. The date of this church is hardly doubtful; the building, except the

353—Mainz: south aisle of cathedral. (From photo.)



354—Bamberg (Bavaria): plan of cathedral. See 355, 356. (From Handbuch.)

nave vaults, is of the eleventh century carried up from an earlier foundation, but the vaulting is known to be of about the year 1250.

Somewhat later in plan and in its main mass is the admirable church of S. Martin at Cologne, called locally Gross S. Martin. This church, in its present form, as shown in Fig. 348, was begun early in the twelfth century, but the tower with its flanking turrets is of the close of the twelfth century, at the time when Gothic art was beginning to take shape not far away to the west. This tower, therefore, with its flanking apses, three in number, expresses very nearly the culminating point of Romanesque exterior design. In Tournai we shall find a greater opportunity, a larger church, a more developed system of apses and the four flanking turrets enlarged into more independent

355—Bamberg cathedral from N. E. (From photo.)

and more important masses; but the scheme is the same and its central idea is better exemplified in the Gross S. Martin than elsewhere. There is no more stately tower in Europe, its size and mass considered. By comparing this solution of the problem with that offered by S. Maria im Capitol it is seen at once how great is the value of the square crossing when the builders are bold enough to carry up four walls on the four arches which enclose it and build the central tower.

The interior of this church has been so much altered, first in the fourteenth century, when pointed arches were substituted for round arches in the clearstory arcades, and more recently by a very elaborate system of decorative painting, that no photograph of it can be made to give an adequate idea of the Romanesque church as it was intended to

be. The church is interesting historically as having been that of a Scottish conventual establishment.

The church of the Holy Apostles at Cologne shows, in Fig. 349, the tri-apsidal system exemplified by S. Maria im Capitol. In this more complete church of the Apostles the four towers at the meeting of the three apses and the nave are carried up in the most fortunate way.

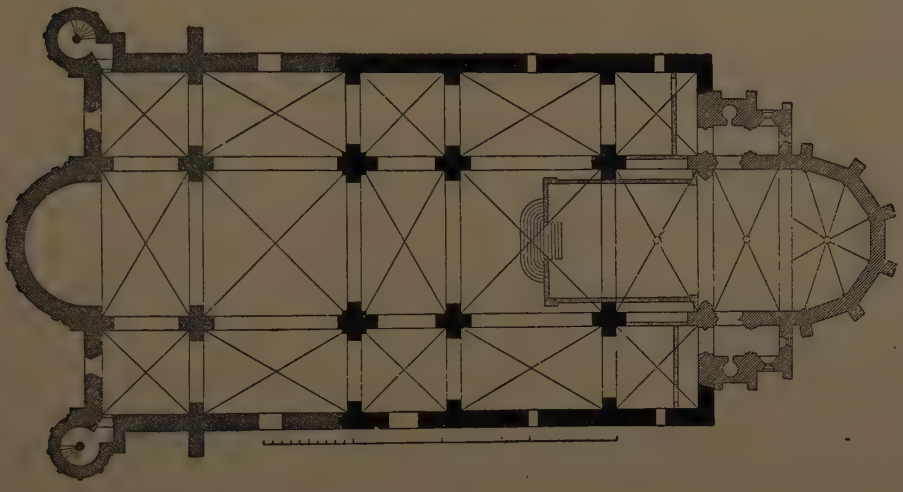
356—Bamberg: spurs of nave piers in cathedral. (From drawing by the author.)

Slender round apsidioles alternate with the large apses of the eastern, northern, and southern sides and from each of these small cylinders rises an octagonal turret with arched windows constantly growing larger to the top. Then the arcade of the apses is carried around the turrets also, binding the whole together. This arcade is to be understood as rising above the vaulting of the church, and opening into the space above this vault and below the wooden roof. It is therefore

closely analogous to the triforium which opens inward and lights the space above the vaulting of the aisles. In this church the central square is covered by a domical structure of octagonal plan. This octagon is carried by the simplest form of diagonal arching from wall to wall across the corners of the square below.

S. Gereon of Cologne is a Romanesque church of extreme interest whose surprising Gothic nave demands special notice in another chapter. Fig. 350 shows the eastern end with its really splendid apse and the square towers which flank it.

The cathedral of Mainz on the Rhine may be considered the most impressive of these West-German churches. Fig. 351 is the plan, and



357—Trier: plan of cathedral. See 358, 359, 360. (From D. and B.)

Fig. 252 shows the exterior as seen from the south-west. In this view the plainer tower, the one nearer the river, is very modern, a careful and well-considered restoration replacing the pseudo-Gothic structure of about 1820.

The pyramidal roofs of the two round turrets which flank it are also entirely new. Otherwise the repairs which the church has undergone were conservative and careful, and the great eastern tower nearest us in the picture, although of the thirteenth century and showing some indications of the Gothic work prevailing in neighboring regions, is yet acceptable as a very possible culmination of the Romanesque tower scheme. If looked at from the point of view of æsthetic design, without reference to epoch, it is seen to be a good instance of the super-

imposition of stories, and also of the diminishing in diameter, above a certain height, by drum resting upon drum without visible conical structure of any kind. The great culmination of that system is to be found in the spire of Strassburg Cathedral; and the one before us may be considered one of its earliest and plainest instances. The interior was vaulted in the thirteenth century with ribbed vaults in a completely Gothic spirit. This Gothic building rises from a system of square

358—Trier: west front of cathedral. (From photo.)

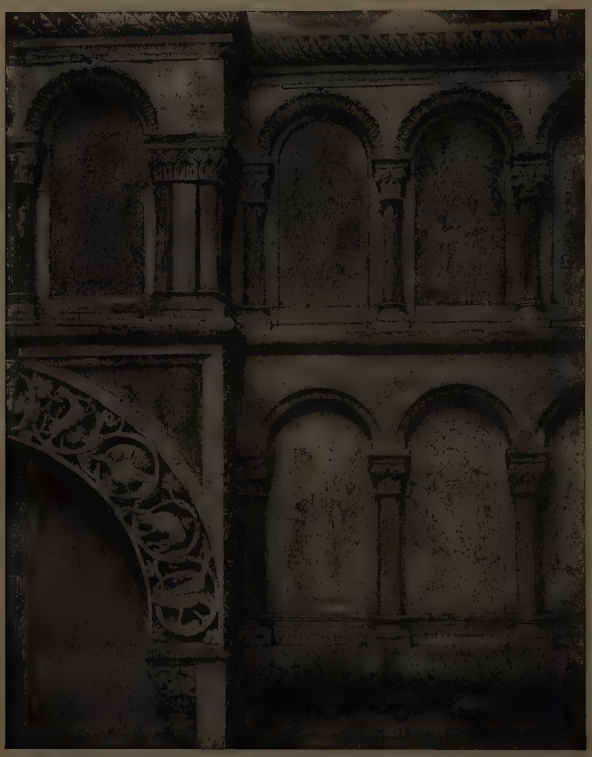
piers and a blind arcade in the upper story between them, the whole more absolutely plain than that of Speyer or that of Tournai, this making an odd contrast with the Gothic roof which has been elaborately painted in modern times. The south aisle of the nave shown in Fig. 353 is of the unaltered Romanesque period. Here is seen the same system as at Speyer—vaulting-shafts with cushion capitals carrying transverse arches and similar arches running the length of the nave; squares enclosed by these round arches and each square filled by a simple groined vault.

This series of late Romanesque churches should not close without mention of the cathedral of Bamberg in Bavaria. This remarkable church, one of the most interesting in Europe, was built in its present form at a time later than the beginnings of Gothic architecture in central France and on the Rhine. The earliest date which is given to the mass of the building is 1180, and there is no doubt that the west end with the choir and the two more elaborate towers, is of the year 1250 or even of a later period than that. It is recorded that in 1274 the west end was still unfinished, and that the Gothic vaulting of this part of the nave and of the western choir was completed. Fig. 354 is the plan of this remarkable church, and Fig. 355 a view of it from the north-east. It was built with more unity of purpose than the churches on the Rhine, such as Speyer and Mainz cathedrals, and the churches named at Cologne, and is therefore to be taken as a fair instance of what the Romanesque of southern Germany was intended to be. The interior is not very different in style from the interiors of Speyer, Mainz and Cologne, and the details resemble those of the Rhine churches and also, still more strongly, those of Tournai, although at Tournai the material is a bluish-grey limestone and at Bamberg, red sandstone of fine texture. Fig. 356 gives four of the spurs of the engaged columns which make up the nave piers. The large torus of the base of each column gives off at the four angles of the plinth the curiously varied projections shown, and one sympathizes more decidedly with the sculptor who wrought No. 1 (shown from two points of view) and No. 4, than with the man who was determined to put a leaf in at all hazards.

359—Trier: east end of cathedral. (From photo.)

The cathedral at Trier has been the subject of more numerous and more complete alterations than most of the Romanesque churches, but the plan is easy to describe. This plan as it existed in 1850 is given in Fig. 357. The western end with its apse, begun about 1050

A.D., is given in Fig. 358 as it still remained in 1860. In that view the square towers which rise immediately behind the nave-aisles, and flank this western apse, are seen in their transitional state; the window openings of the northern tower still round-arched and of the earliest construction, while those of the south tower have been modified in later times. These towers are marred in their effect by the curious pent-house roof which is carried across them at the level of the eaves



360—Trier: arcades of interior of cathedral. (From photo.)

of the apse, this being evidently the work of some master of the work who cared for horizontal lines to bind the composition together. He did not invade the round stairway turrets of the angles; and this fact saves the west front, for the repetition of the rounded apse by the smaller rounded mass of the corners is of the greatest value to the whole design. The north transept is seen on the extreme left; on the right a small part of the wonderful Gothic church of Our Lady, of which there is discussion in Volume III.

The east end of the church is shown in Fig. 359 with the curious

sixteenth century chapel built out beyond the sanctuary. The slender square towers have pyramidal roofs which belong to a very modern restoration, for as late as 1865 those towers ended in bulging bell-shaped tops with wooden belfrys above them. No general view of the cathedral stretching out its length from east to west is at all effective, The towers do not form an interesting group nor do they help the general mass of the church; and fine as are many of the larger details and still more fine many of the minor details—doorways, windows and the like—the church is not impressive as a whole. The gallery, as at

361—Tournai (Belgium): south flank of cathedral. See 362, 363, (From photo.)

Tournai and at Bamberg, is of great interest, and the earlier decorative arcades are of extreme beauty (see Fig. 360).

The cathedral of Tournai in French Flanders, now a part of the kingdom of Belgium, was completed as a tri-apsidal church in the course of the eleventh century. Of that day are the masonry walls of the tower over the crossing, and the four completed towers flanking the two side apses except where pointed windows have been put in at a later date. The eastern apse was removed in the fourteenth century and the splendid Gothic choir built to replace it. This disposition is fairly well shown in the photograph, Fig. 361. This view is of the

south flank, and shows that the westernmost of the two south towers has been partly rebuilt, as indicated by the pointed arches of its upper stories; but the structure remains original and the whole disposition of the central group is unchanged. Just what the middle tower, the great square rising from the crossing, was intended to be, we have no information, but the effect—now low, broad, and yet crowned with a sharply pointed octagonal roof contrasting with the high and splendid

362—Tournai: nave of cathedral, looking east. (From photo.)

square towers—is very happy. The only question as to its merit as a part of the general design is this—whether the great height and mass of this group of towers and apses does not overwhelm the nave. That nave, taken by itself, is dignified and does not, as one sees it within, suffer from shortness; but from without the full mass of the tri-apsidal arrangement with the central tower is not fully appreciated, nor can it be seen from any one point.

Fig. 362 gives the interior of the nave, which is quite unusual in the great size of the upper gallery: in this respect similar to that of

S. George at Limburg, as given in Fig. 344. The four-storied arrangement is adopted in the frankest way. The first and the second rows of arches are of almost exactly the same size and of nearly the same disposition, though the plans of the piers differ. The clearstory, then, is low and not imposing, a gallery separating the heavy arcades below from the clearstory wall, and the whole arrangement is extremely

363—Tournai: capitals of interior of cathedral. (From photo.)

fortunate. Fig. 363 gives two groups of the capitals of the ground story.

The original west front of Tournai has disappeared; there is no evidence of there having been any sculpture applied to it. The whole exterior of the church is singularly plain, for a building erected in the eleventh century in a prosperous community. The contrast between this severity, seen in French Flanders and the contemporary building of the central provinces of mediæval France, is even more noticeable here than in the other parts of this district nearer the Rhine.

CHAPTER V

LATER ROMANESQUE: SPAIN

THE Romanesque architecture of Spain, like that of England, is made difficult of study by constant removal, change, and alteration of its principal monuments. The strong leadership of the ecclesiastical authorities in national affairs has led to the constant care of great churches, which care has involved great splendour of internal decoration and furnishing, and also frequent rebuilding in a later style. Moreover, it is in the north of Spain alone that a Christian style could be used with freedom during the Romanesque period, from 1000 to 1200: for all of Spain south of N. Lat. 40° remained under Moorish domination.

No great Romanesque church is left for us to study, and but few complete churches of any rank. San Isidoro at Leon, the church of S. Mary at Valladolid, the old cathedral of Tarragona, and most of all, the small, ancient cathedral of Salamanca closely nestling under the walls of the huge sixteenth century cathedral, are buildings whose like for generally good preservation it is hard to find in other countries of Europe. San Vicente at Avila also, a church not rich nor splendid but full of a quiet interest, is, though late, of such completely Romanesque character and of such richness of detail in certain minor parts, that it deserves especial consideration. In many towns of Spain there are admirable important fragments of churches: doorways, fronts of naves, or transepts, and especially cloisters, some of surprising variety and wealth of detail.

The little "Hermitage" (Spanish, Ermita, or Ermitago) at Lena in the Province of Oviedo, is illustrated in the great *Monumentos Arquitectonicos de España*. The measured drawings enable the student to get an adequate notion of a seventh century church, having a nave not more than 16 feet wide, a length over all of 75 feet, and a

generally cruciform plan formed by the addition to the nave of four chapel-like additions, one of which, however, serves as the porch of entrance. The nave is spanned by a tunnel vault, with four transverse arches which seem to spring from corbels curiously wrought in imitation of Roman medallions. The use of shafts without capitals is the peculiar feature of this little building. Their careful adjustment to the general design precludes the idea of their being merely broken pieces of ancient columns used without thought; moreover, several of them are built into that screen which cuts off a part of the nave with a raised floor, and which serves as a chancel. Further study of the neglected and half ruined monuments of Navarre and Barcelona would result in the discovery of more such very early pieces of Romanesque art.

The church in the village of Baños de Pisuerga is dedicated to S. John the Baptist, and yet is not a baptistery in the ordinary sense of that term. It is a small basilica with columns evidently of local make, the shafts rudely rounded and the capitals showing a rather barbarous rendering of acanthus leafage done by workmen with poor tools and uncertain touch. The light is received from small round-headed clearstory windows, but nothing of any original interior adornment remains visible, all being covered by whitewash. The exterior walls are built up rudely in heavy stones embedded in large quantities of mortar, and this has been newly reshaped and smoothed as a farmer repairs the stone walls of his field.

Close to the town of Oviedo (the Asturias) is the basilica of S. Miguel de Lino, which has been much injured by the change of its ground plan to make room for new streets, but it preserves unaltered and unrestored its very curious and very interesting capitals and bands of scrollwork and floral sculpture in a spirit closely resembling that of the Syrian sculptures identified as of the sixth century. If we assume a somewhat longer continuance, in this western province, of Roman ideas, that may well be taken as showing that this church is not later than the seventh or the early years of the eighth century. It is not sufficient to give to the student any adequate notion of the church edifices of the period, but its details are interesting. In another suburb of Oviedo, the village of Naranco, is a church of the ninth century, now dedicated to the Virgin. It is suggested that it was a part of the palace of that Ramiro who was king of Navarre and the Asturias about 850. The building as it remains for us is vaulted with a single tunnel

vault, braced and strengthened by heavy transverse arches which spring from corbels engaged in the topmost courses of the wall, and from each corbel a pilaster-like vertical member is carried downward until it stops in a disk somewhat wider than the band. These disks are nearly flat, sculptured in low relief, and each one fills rather closely a spandrel between two arches of the nave arcade. The resemblance of these disks to medallions, and their lack of close imitation of any classical architectural member is very marked. We find the same feature in the little Hermitage of Lena mentioned above. In the church of Oviedo these disks are an important part of the internal design and two of them are arranged at the east end of the church in the spandrel of the arch which crosses the nave and cuts off a chamber for the chancel or sanctuary. In other respects there is no sign of classical influence. The pillars are made up of block capitals cut to a nearly cubical shape and then cut away at the corners, to be octagonal below while remaining square above. Their broad faces are then sculptured with very rude figures of animals, always, it would seem, with symbolic intent. The shafts which carry these rude capitals are sculptured in imitation of the spiral reedings occasionally found in Roman work, but in this case they are fourfold, each shaft treated with quatrefoil section and each of the rounded

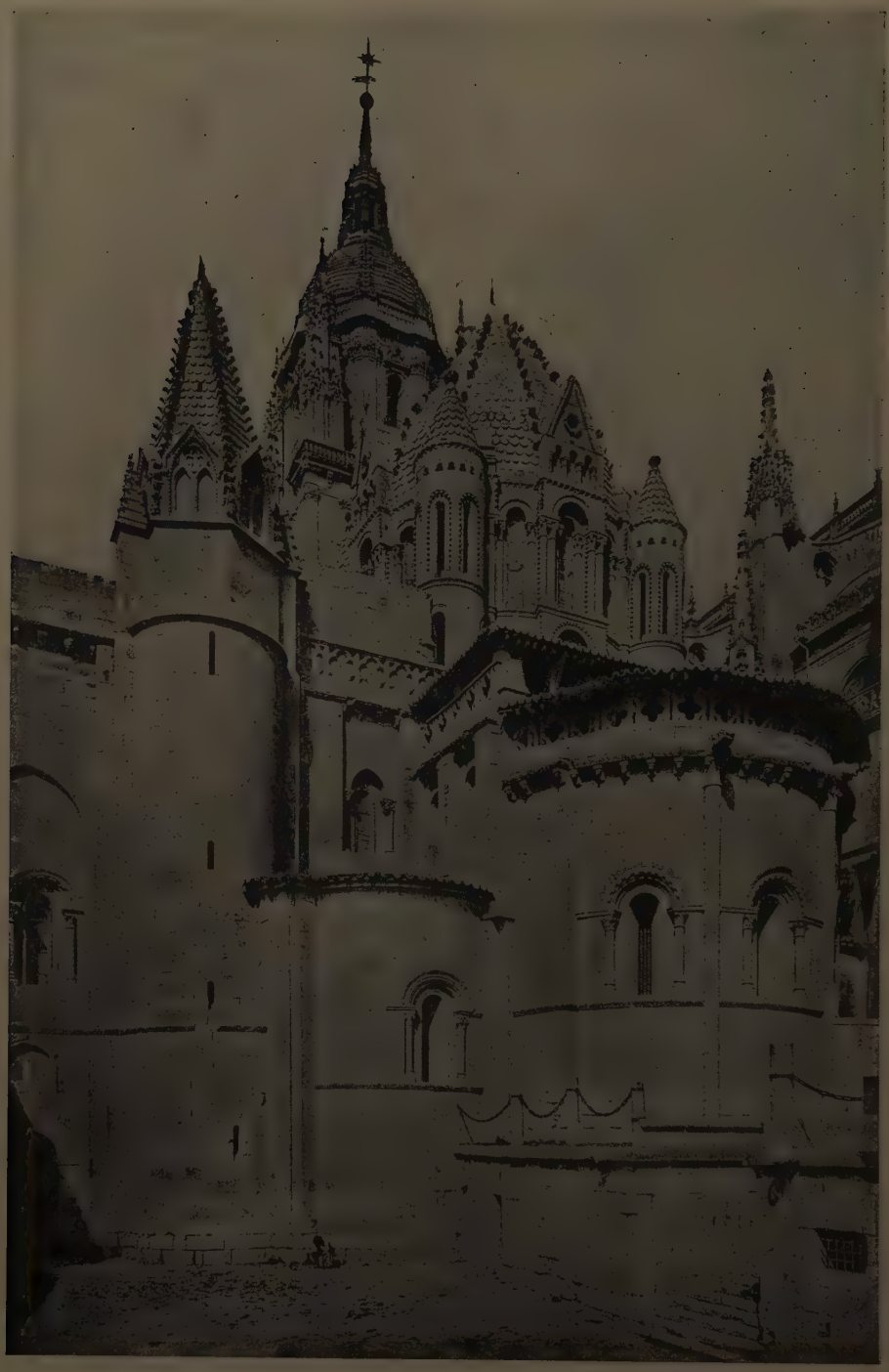
364—Church of S. Jaime de Fontana from the S. W. (From photo.)

masses reeded by itself. The work is extremely rude, yet infinite pains and trouble have been spent to procure this effect of contrasting spirals. The exterior of the little church is marked by the same use of pilaster-strips of slight projection, that we find so common in France.

One of the most curious early buildings of Spain is the Templars' Chapel at Eunate (or Enate) in Navarre. This building is an octagon with a slightly projecting apse added to one side and a curious bell-gable rising above its roof. The marked feature of the design is, however, the surrounding arcade—an octagonal screen of arches supported on corbeled-out columns on every side except the east, the whole closely studied from the external adornment of "The Dome of the Rock" at Jerusalem. The relation of this building to the fraternity of the Templars seems to depend merely upon its form, which, like that of the church at Cambridge and many octagonal buildings once existing in Europe, is studied from the Syrian building which we now call the Mosque of Omar. There was much confusion during the Middle Ages and until very modern times between that church and the church of the Holy Sepulchre, which was once a radiate building without the basilica-like nave which was added in later times.

365—Cloister of S. Benet de Bages (Lerida). (From photo.)

The churches which still remain to us from the tenth and eleventh centuries are well represented by the little church of San Jaime de



366—Salamanca: east end of the old cathedral. (From photo.)

Fontana, shown in Fig. 364. The front has been marred by cannon shot in some of the numerous wars which that frontier has suffered. The combination of the double bell-tower with the front, evidently an afterthought and carried out by rude and hasty work, has yet a not disagreeable result. The polygonal tower above the sanctuary is extremely interesting, and the little openings near the cornice were originally intended for light and ventilation but have been closed with

367—Avila: east end of S. Pedro. See 368, 369. (From photo.)

masonry. A similar example of the eleventh century work is San Benet de Bages (Lerida) in the great ancient province Cataluna (Catalonia). The cloister of this church, Fig. 365, is of great interest —the arches carried on the double capitals supported by two shafts coupled in the thickness of the wall, and carved with great freedom and boldness in a style almost Gothic. The work has been done by stonecutters of real ability. The squared blocks of the wall and the voussoirs of the heavy arches are all wrought with thorough-

ness and skill, and we are led to expect some interesting revelations if ever the church is examined with exhaustive care.

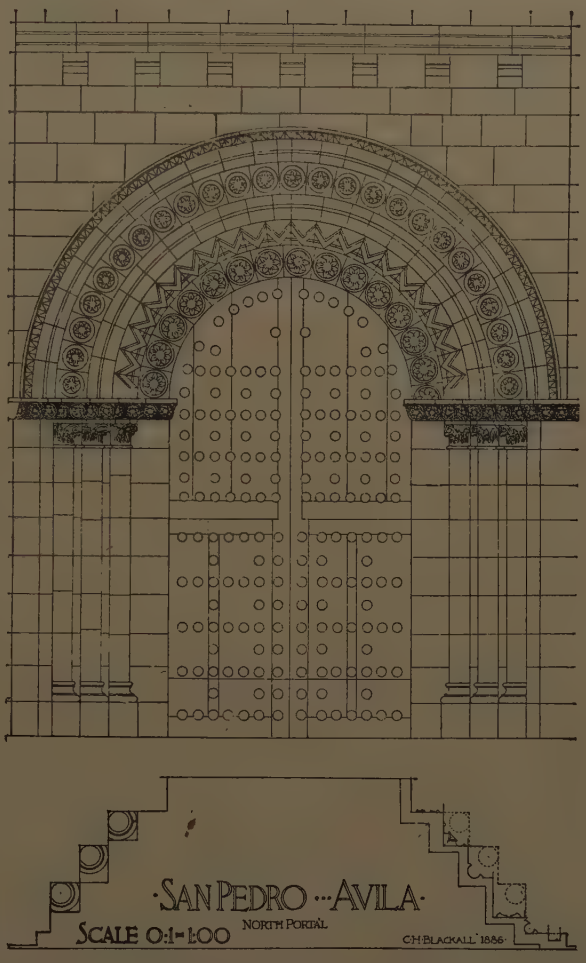
Of the early buildings, that one which is of the greatest importance is the older cathedral of Salamanca. The cimborio or central tower rising above the sanctuary has been studied by modern designers in the Romanesque style, and the form will be familiar to many who have not known its origin. Fig. 366 shows the eastern extremity of this church; the huge mass of the sixteenth century cathedral rising on the right, and on the left a round staircase turret which is, with

368—West front of S. Pedro. See 367, 369. (From photo.)

its neighbouring buildings, a thirteenth century structure. What is original, then, is the central apse with the smaller apse of the south aisle, and above these the cimborio itself, the low tower with four dormer windows and four flanking turrets. The larger and higher cupola, seen just beyond this, is of later date.

The church of S. Pedro at Avila is thought to be of the earliest years of the twelfth century. Fig. 367 shows the east end with its three apses, beautifully proportioned one to another and each to the whole group; the square tower which covers the corner; and the higher and more slender tower which serves now the purpose which it was intended to

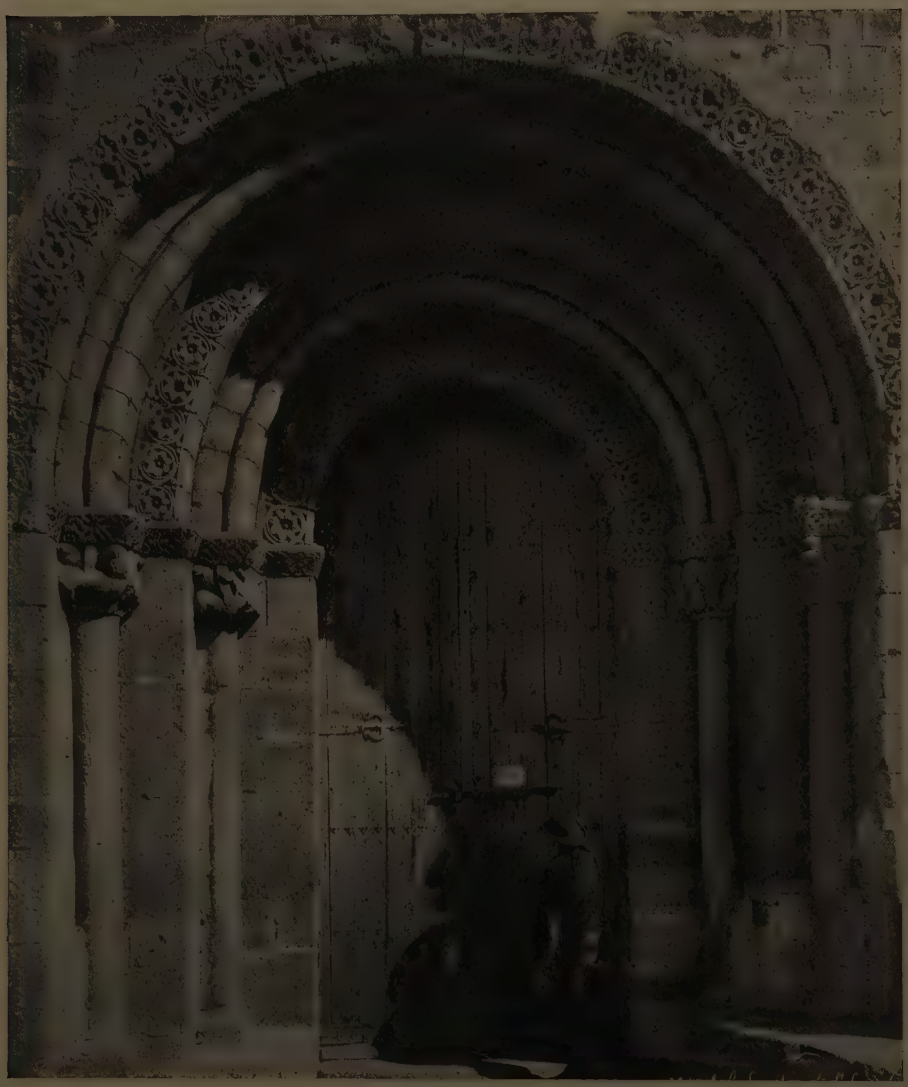
serve—that of a bell-tower. It is not, however, complete; the belfry chamber has disappeared altogether and the present and insignificant bells were hung between the jambs of the ordinary modern windows built in the repaired wall. The central tower also has lost its spire-like roof. The west front of S. Pedro is seen in Fig. 368, but the wheel window over the great door is much more modern in its details, though the zigzag in the surrounding mouldings is original, and with this undoubtedly the whole group of mouldings, not merely those which encircle the window itself, but those of the semicircular arch above it. The doorway, too, is unaltered; but this is altogether unadorned, and it will be easy to give far more interesting doorways of the same and of immediately succeeding dates. The north portal is much more elaborate than the main door in the west end of the church.



369—North doorway of S. Pedro. See 367, 368. (From drawing by C. H. Blackall.)

Fig. 369 is a faithful drawing of that north portal made to measurement in 1886, and Mr. Blackall, in selecting that subject for his careful reproduction, informed himself first of its entirely authentic and unaltered condition. The only part of it which seems to speak for a later date than 1100 is the foliage of the six capitals of engaged columns which make up the sloping jambs of the doorway. The decoration

by means of disk-like flowers, which is used in the archivolt of that northern doorway, is shown in richer and more interesting form in Fig. 370—the principal doorway of another one of those curious chapel-like places of worship which the Spanish people call by a name signifying



370—Avila: doorway of S. Segundo. (From photo.)

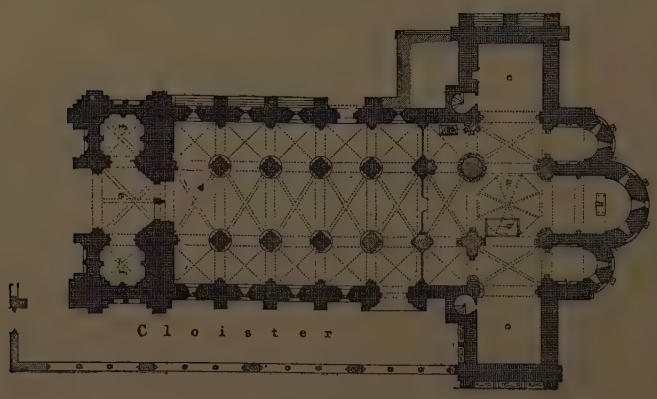
hermitage or place of retirement. The one now under consideration is known as San Segundo. There is little of it marked by elaborate architectural care except this beautiful doorway, but the plain interior has granite columns supporting a wooden ceiling of some interest

and the whole church is probably an eighth century basilica to which a twelfth century front has been added. The beautiful doorway has a certain characteristic not very common in Romanesque architectural sculpture: it is concentrated,—the sculpture is gathered up into certain parts of the door-head—gathered with definite purpose to subserve a definite end. The three archivolts decorated with very similar star-flowers, each surrounded by a ring, have this peculiarity, that the flowers of the inner ring are eight-pointed, those of the second ring seven-pointed, and some of those of the outer ring eight-pointed again: there can be no doubt that the artist had a purpose in this distribution, and that he knew the value of such slight contrasts as these. Then the similar flowers of the capital below—of that horizontal band which breaks around every projection and inset of the jamb—are four-pointed and are arranged in couples, and these four-pointed flowers serve as a subsidiary ornament to the sculptured capitals below, very rightly diminished in size as well as in elaboration. The capitals themselves are too much broken to be judged of as works of sculpture: they are irregular and grotesque rather than truly effective as the termination of engaged columns.

371.—Avila: Interior of S. Vicente. See 372, 373. (From photo.)

In the same city the beautiful church of S. Vicente has been much restored, and yet without injury to its important architectural features. The interior, Fig. 371, is less interesting than it was before the stonework was scraped and the joints freshly pointed, but the main parts of the church are apparently unmodified and even the sculpture has

its ancient characteristics. It is altogether French in its disposition; but so are the more important interiors of Italy and Germany, in fact, there are but two general types of the interior ordonnance in these twelfth century churches—ordonnances varying merely in the greater or smaller proportions of the second gallery. This is sometimes small and low; and again, as in Tournai cathedral and Norwich cathedral, it is a noble gallery, as important as the nave-arcade below. In San Vicente it is a mere triforium gallery: but on this account is exceptional and remarkable in Spain. The vaulting-piers start with all the members of the nave piers from a huge circular base (a very unusual disposition) and rise unaltered to the springing of the vaults: so that the much later vaults now in place are perfectly in harmony with the

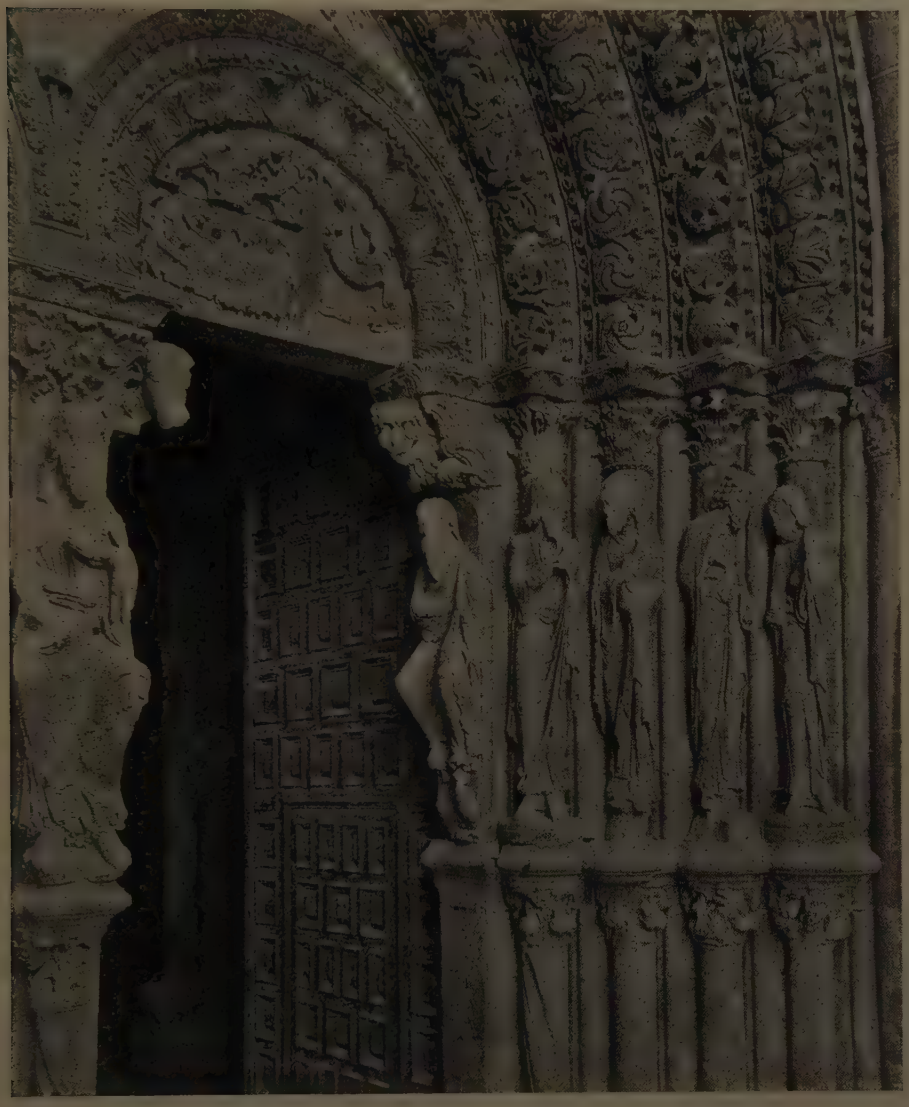


372—Plan of S. Vicente. See 371, 373. (From Street.)

general design. Fig. 372 gives the plan of San Vicente; from which it may be learned that Fig. 371 shows four and a half bays of the nave, the easternmost of these being filled on the left side by the great organ, and enclosed in the *coro*, or chancel, by an iron grating. The crossing and the supports of the tower are seen in the arches which are much lower than the nave vaults.

The exterior is chiefly remarkable for its really splendid west doorway, given in Fig. 373. At the time this photograph was taken, no restorer's chisel had been at work upon these grave and refined ideal portrait statues, nor upon the scrollwork and the grotesque animals in high relief which adorn the archivolt above. The capitals of the lowermost range of columns have, indeed, been broken and bruised out of all recognition; they have lost their charm as works of sculpture, but at least they have not been replaced by new capitals

in the taste of the nineteenth century restorer. The capitals of the second ring and those which are seen above the heads of the five saints who stand as guardians of the porch, are injured indeed, but they tell



373—West doorway of S. Vicente. See 371, 372. (From photo.)

their story perfectly. Let us have a restored copy of them in the church or in any museum, but let us hope for the retention of this broken leafage until it falls to pieces by its own weight and the stress of time and weather alone. Particularly attractive is the foliated abacus

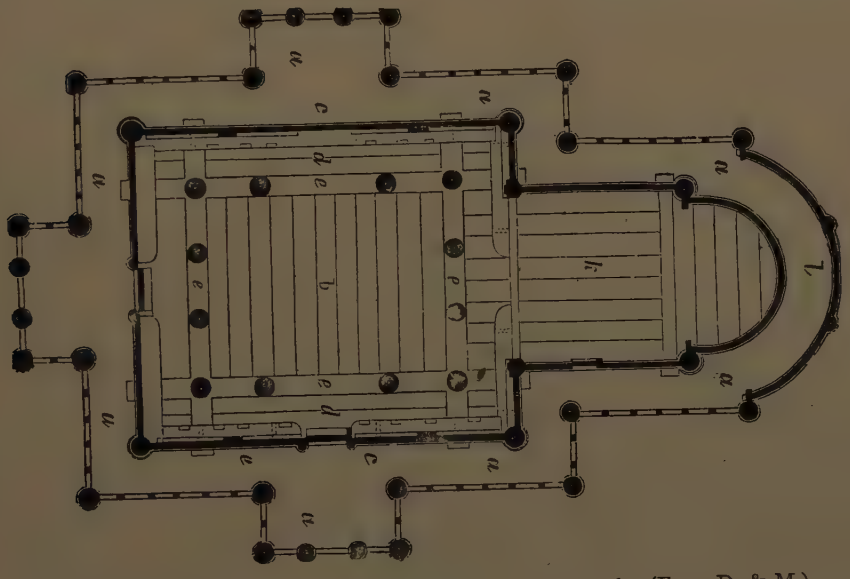
moulding which dominates these capitals and separates them from the archivolts of the porch. Indeed the whole of this doorway is one of the great achievements of Mediæval art, and is worthy of indefinitely prolonged and careful study. The strange creatures of the innermost ring are as precious as anything in Romanesque sculpture. A lion, a sphinx, a strange harpy-like monster, and other such vagaries of the human spirit (for even the lion is a fantastic creature enough) alternate with each other in the great ring which surrounds the main tympanum of the double doorway. Then of the two doorways themselves, the two tympana are filled with religious history and legend enclosed in sculptured bands of a real Italian grace and delicacy, and a more than Italian energy. In some way not now explicable the workmen of 1150 and thereabouts in that northern town of Spain, were inspired with what was best in their southern and northern schools, and used their energies upon this beautiful porch.

The church of San Isidoro at Leon is of about 1150. Its principal charm is to be found in the remarkable burial chapel called the royal pantheon, which received the bodies of the kings of Leon and also of those kings of Castile and Leon who worked for the unification of the Christian church. The chapel has a lofty vault, springing from low and heavy columns, and the vaulted roof is most elaborately painted, there being nowhere in Europe a more nearly intact series of very early decorative pictures than these. The sculpture of the capitals is not of the highest artistic interest—they are overloaded for sculpture not more intelligently designed than this—and yet the general effect of the extreme enrichment of the large capitals terminating the short and plain shafts is effective enough. Apart from this chapel, the church is a very careful and severe piece of Romanesque of the middle of the twelfth century. Some minute sculpture has been built into the north front, but it has all the appearance of having been brought from another edifice, and one of the earlier time. There is also much florid Renaissance sculpture added to some of the porches.

CHAPTER VI

LATER ROMANESQUE: SCANDINAVIA

UNTIL the end of the eleventh century, the architecture of Scandinavia was almost entirely of wood: it was not until the latter part of the twelfth century that church-building in stone was generally adopted. These northern peoples appear to have clung tenaciously to their traditional methods of building, in



374—Borgund, Norway: plan of stave-church. See 375, 376. (From D. & M.)

spite of whatever influence may have been brought to bear by missionaries from the south—from Germany and from the British Isles. It is known that Christian churches were built in Scandinavia as early as the ninth century, yet three hundred years were to elapse before the early style of wooden construction began to yield to the influence of

the southern architecture of stone. At the close of the twelfth century, the more important churches were being replaced by stone structures, many of them vaulted; but the fashion of building in wood still remained largely in favor, especially in the more northern districts, whither the new methods from the south were slow to penetrate. In such localities, the interesting "stave-churches" were, in numerous instances, retained, and well-preserved examples are yet to be seen.

375—Borgund, Norway: sectional view of stave-church. See 374, 376. (From R. R.)

The Romanesque of Norway is, indeed, chiefly important in the wooden churches which have been preserved by the loving care of modern archæologists. One of the most valuable of these is the church at Borgund, the plan of which is given in Fig. 374. Each one of the round posts of the interior rises to the level of the roof-plate, and this plate on the two flanks carries a very steep-pitched roof whose construction is shown in the diagram, Fig. 375. The four posts which

fill the east and west sides do not carry the construction of the roof, nor aid in any direct way to strengthen the church; but they complete the colonnade, if it may be called so, and divide the nave from the choir on one side, and from the inner porch, the narthex, on the west. The outer gallery marked *a a* in the plan is the most characteristic feature of the churches of the far north. It is a continuous porch, serving as a sheltered passage, from one to another doorway of entrance,

376—Borgund, Norway: stave-church from north-west. See 374, 375. (From R. R.)

keeping snow-drifts from the inner walls, and of use also as a wind-break. In the whole plan and in the carrying up of the superstructure there is seen the most extreme forethought used to keep out cold, and to shut in the air warmed by the stoves. Windows are few and can be closed altogether by wooden shutters: even the clearstory is not a clear-story in the usual sense, because of the absence of light-giving windows. It is probable that in winter the lighting of the sanctuary by artificial

means was all that was demanded. The outer wall of the church proper is framed with sills and corner-posts of solid timber, and has the

377—Hitterdal, Norway: stave-church. See 378. (From Joseph.)

spaces filled, and the wall-panels heavily built, of upright planks fitted closely together:—whence the name *Stave-Churches*. The outer gallery is, then, opened up with simulated arcades cut in timber, but

these are small and low; and much the greater part of the exterior face of the gallery is either heavily panelled in wood, or of shingled roofing set at a very steep pitch. Fig. 376 gives the exterior of the church of Borgund, which is, with one exception, the most elaborate in appearance and in construction of all these wooden churches.

378—Sauland, Norway: doorway of church. (From R. R.)

The exception noted above is the church at Hitterdal, Fig. 377. Its plan is not unlike that of Borgund, but its interior design is much more elaborate, the round posts of the one church being replaced by clustered or reeded piers in the other, which piers have, moreover, sculptured capitals affecting the appearance of stone pillars by their size and the fashion of their decoration. This is only in the actual upright; the framing, the putting together of the parts of the woodwork is as completely carpenterlike in the one case as in the other and

affords a curious study of what can be done with wood alone by a race of men not even pretending to employ in a scientific way the properties of the material. Still more absolute negation of the science of building, as an engineer would consider it, is that found in the Swiss châlets (for which see Vol. III), but the Norwegian wood-work, though used less frankly in the way that stone would be, is still made to serve the

379—Urnes, Norway: carved staves of north flank of church. (From D. & M.)

builder's purpose by the thickness and mass of its pieces, rather than by any skill shown in their combination.

The sculpture of these wooden churches has been celebrated throughout Europe as Runic, and the peculiar interlaced style of the scroll-work has been known by the inappropriate name, the Runic knot. In spite of all the attention given to it by the archæologists, the exact date of important pieces still remains undetermined. There seems no reason to doubt its practically contemporaneous date with that of the churches to which it is applied. A single upright plank, forming the side of a doorway, is carved deeply in a pattern of spiral

scrolls, with much interlacing of the parts, as in Fig. 378, which is taken from a church much like that illustrated in Fig. 377. Not only the doorways are adorned in this fashion, but in some cases decorated pilasterlike strips appear in the otherwise blank side of a church. The impression made upon the student is that the builders would gladly have carved every one of the "staves," or heavy upright planks, which make up the substance of their walls; and that, in every case, they carried their decorative work as far as circumstances would permit. Thus, in the little church at Urnes, a small side door is carved with scroll-work more elaborate than that represented in Fig. 378, and the planks which flank that door and form its jambs are sculptured

380—Ribe, Jutland: cathedral from north-east. See 381, 382. (From Helms.)

in the same manner and with great elaboration (Fig. 379). Then the plank next adjoining that carved door-post on the east is plain, but the second is carved as richly as the door-post; and the same motive is repeated. Then the round posts which carry the wall-plate and the roof are themselves taken in hand by the sculptor and the north-eastern corner-post is sculptured with even greater vigor of relief than are

the flat planks of the doorway. In the interior of the same church the round posts are smooth, but their capitals, closely studied from the nearly cubical capitals of German Romanesque, are panelled on each side and the panels are filled with grotesque carvings of beasts. These sculptures show much observation, but all truth to natural form and action is sunk in the desire to produce a twisted and contorted composition.

The stone architecture of Norway shows characteristics both of German and of Norman-English Romanesque. The churches of Ibestal and of Throndenaes are vaulted and, in general character, are not unlike the twelfth century churches of the upper Rhine.

The cathedral of Trondhyem (German: Drontheim) has retained its Romanesque plan, and some portions of the corresponding structure

381—Ribe, Jutland: aisle of cathedral. See 380, 382. (From Helms.)

still remain; but the greater part has been rebuilt in late Gothic style. The chapter house alone remains consistently Romanesque, although of so late a character that it may be considered as transitional. All parts of the earlier period are distinctly Norman-English.

The best examples of Scandinavian Romanesque, aside from the

wooden architecture of the north, are to be found in Danish territory. No examples of the period prior to the end of the eleventh century now exist, and as timber had been the only material for construction up to this period, it is entirely probable that all edifices of these early times had ceased to exist many years before the Reformation. It is certain that wooden churches were being erected in Denmark

382—Ribe, Jutland: nave of cathedral, looking east. See 380, 381. (From Helms.)

early in the ninth century, and that not until three hundred years later had stone been introduced as a building material.

Danish architecture of the twelfth century is almost wholly German in its essential characteristics. Plan and construction are like those found in the Rhineland and the provinces of the north of Germany.

The cathedral of Ribe, whose present edifice was begun in 1117, has been added to in an interesting fashion by more recent builders, but the first designers were content with a plain basilica, a high and broad transept with an apse projecting to the east, and a nave and two aisles stopping against the west wall of the transept in the ancient

fashion. Of later date is the high, square tower flanking the west front on the northern side, and repeated in an architectural sense by a smaller tower containing a staircase, at the south-west angle. The very interesting group made by this cathedral is seen in Fig. 380, and this point of view exhibits but few of the changes due to the thirteenth and later centuries. The interior is entirely North German in character, having a high vaulted aisle on either side of the nave, a low gallery broken up into groups of three arches each, and a clear-

383—Kallundborg, Zealand: plan of church. See 384. (From Holm.)

story which was undoubtedly meant to be higher and more imposing than that of the existing church. The interior is seen in Figs. 381 and 382, from drawings made before the recent restoration of the church, and which shows the system of vaulting and the engaged columns with cushion capitals which serve as vaulting shafts of the aisle. The nave-vaulting, however, is of the Gothic period, and undoubtedly replaces a flat wooden ceiling which allowed the clearstory windows more space.

The curious plan of the church at Kallundborg, on the Island of Zealand, is given in Fig. 383. It is nearly contemporaneous with the cathedral at Ribe, and no ready explanation of its very unusual disposition has been offered. Each one of the four arms ends in an octagonal tower surrounding that of the central crossing. Its dispo-

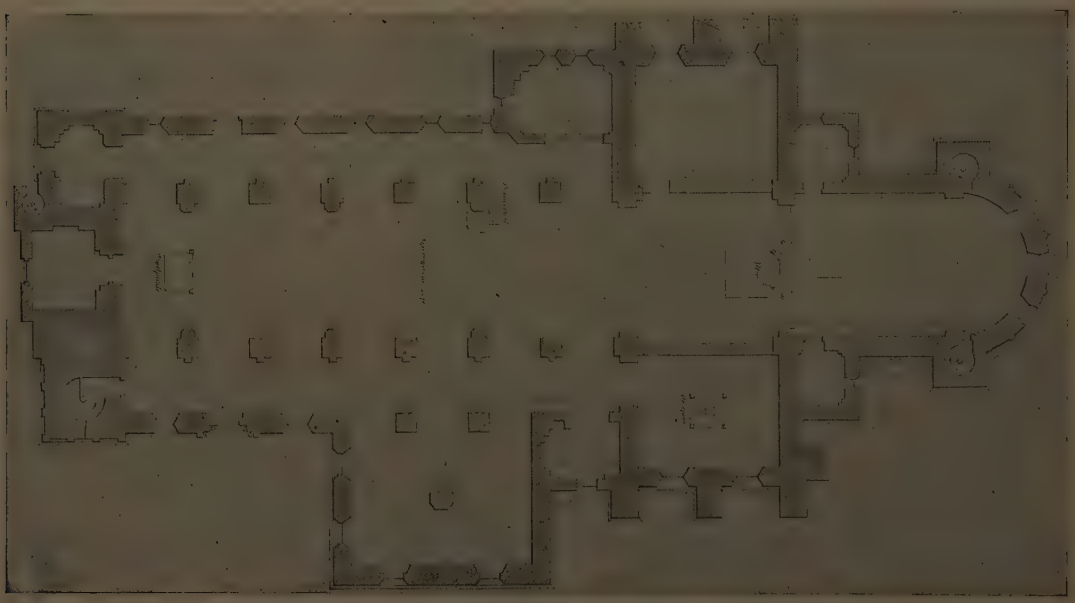
sition is shown in Fig. 384, the church being represented before any of the careful restoration of recent times had been made. There is no evidence that the roofing of the towers is contrary, in any essential particular, to that intended by the first designers. The roofs must

384—Kallundborg, Zealand: west front of church. See 383. (From Holm.)

have been changed, however, many times between the close of the twelfth century and the decline of the Gothic style.

Of all the churches of Denmark, however, the cathedral of Viborg is the most important. It is also the earliest of the existing Roman-

esque churches, having an undoubted date of 1130 for the plan and the nave piers, and having been completed, as we now see it, before 1180. The plan is given in Fig. 385. In this plan, the square piers which separate the nave arcades are as originally designed, but the added pilasterlike mass on the nave side of every second pier is of the time of the Renaissance, about 1580. This arrangement is shown in Fig. 386, where the short piers from which the arches spring are all of the original plan, as are also the two large piers of the crossing, whereas the octagonal pillars engaged with the piers are of the later period. These last have been swept away by recent restoration, so that

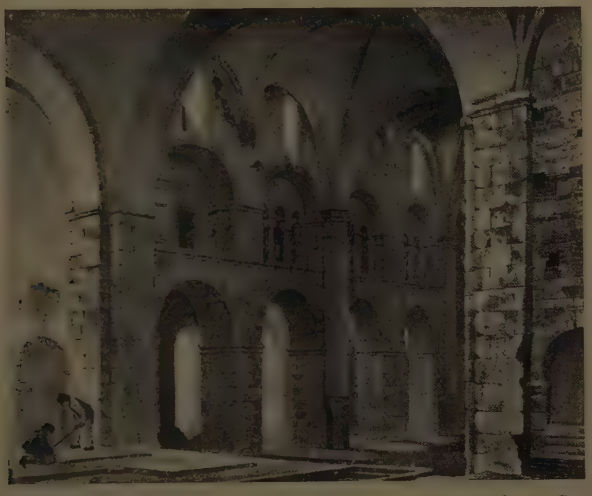


385—Viborg, Jutland: plan of cathedral. See 386. (From Holm.)

the church now shows a uniform interior, every bay corresponding in all respects with the others; a simple straight row of seven arches alternating with six piers, beside the great pier of the crossing and the responds engaged with the west wall. It is very curious to see that determination of the workmen of the sixteenth century to give to the ancient basilica the grouped appearance such as we have in the churches of Milan, Pavia, Verona, and Florence; and the ready return to the old scheme by the better advised restorers of the nineteenth century.

The province of Jutland is rich with small granite churches, the distinctive type of which is a simple nave with a square western tower,

large in proportion to the body of the church. One of the best of these, and yet characteristic of the greater number, is the church at Lime, on the little peninsula of Salling on the north-western coast of the province. A plan and south flank are shown in Fig. 387. It is noticeable that the tower is of the full width of the church and is not square in plan. This feature also is common to the churches of the region. The ancient system by which the door of the church was guarded by a tower fortified, or capable of easy adjustment to the necessities of defense, would seem to be recalled by these large west end towers, which, however, have long since lost their original upper

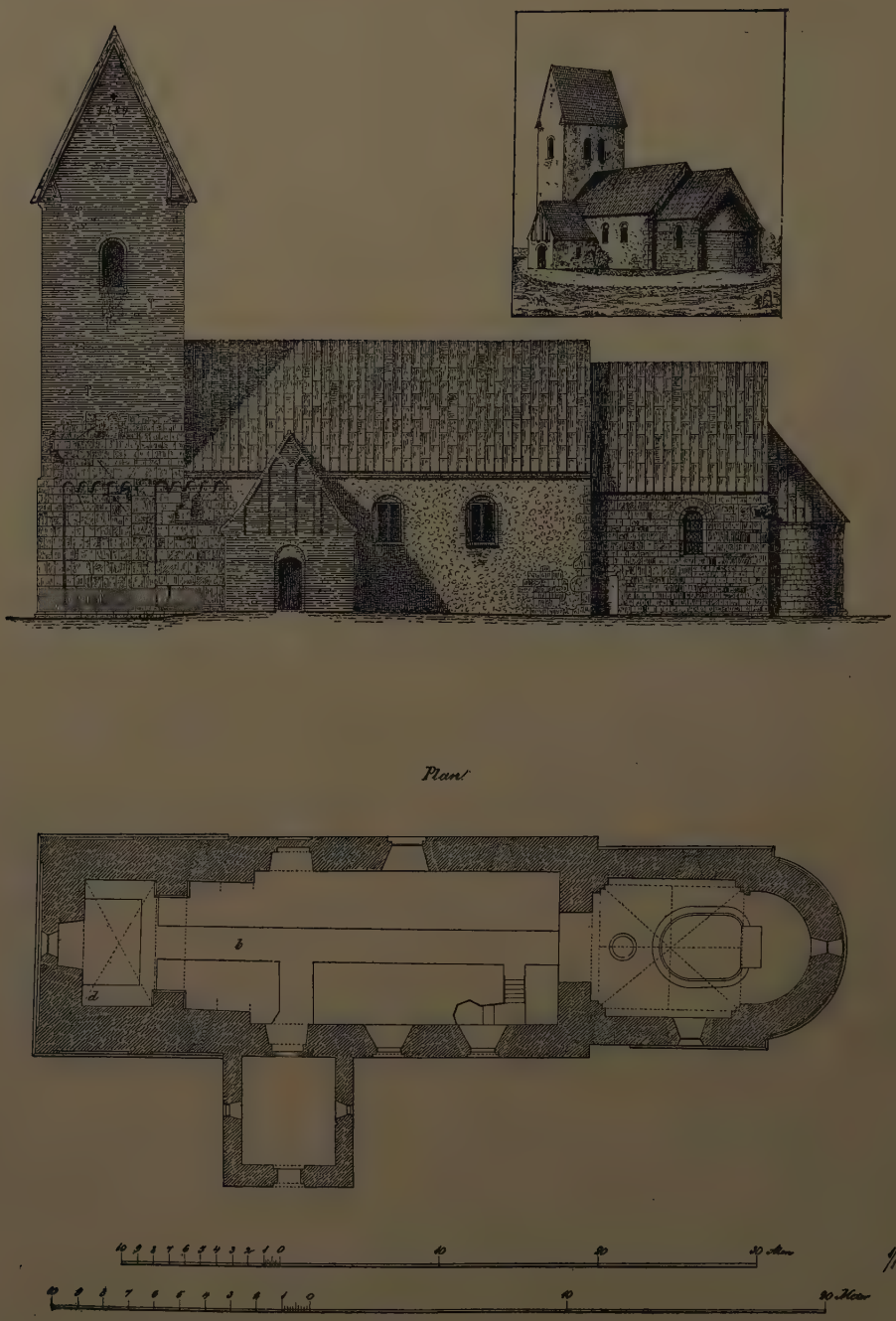


386—Viborg, Jutland: nave of cathedral, seen from crossing. See 385. (From Holm.)

stories and are roofed with saddle-back roofs of simple construction. Even the entrance has left the west end, and is arranged in a side porch.

At the time we are considering, the territory of Denmark included a large part of the lands now forming the Kingdom of Sweden. No distinctive style was developed in the latter country, and the examples of Romanesque to be found there are entirely Danish. Of these, the most important is the cathedral of Lund, shown in Fig. 388.

Like those of Denmark proper, this church is essentially German in its general character, although of much simpler plan than those which are typical of the Rhine country. It is of the basilica form, with transept and one apse, and only two towers flanking the western front. In the decorative details, however, a northern touch is very



387—Lime, Jutland: plan, elevation of south front and view from south-east. (From Uldall.)

evident. The beautiful sculpture of the doorway in the north flank (Fig. 389) is distinctively the work of Scandinavian artists; while yet the general design of the portal, the grouping of architectural members, indicate a southern origin. The stepped arch of seven orders, surmounted and enclosed by the projecting porch and columns, form a composition which, in point of elaboration and delicacy of proportion, is not often to be met with in the Scandinavian buildings of this period. This church may be considered as the finest example

388—Lund, Sweden: cathedral from south-east. See 389. (From Joseph.)

of Danish Romanesque and, for architectural detail, as unsurpassed in these northern countries.

Some interesting examples remain on the island of Gotland. Of these, the church of the Holy Ghost at Visby (Wisby) was certainly completed in the eleventh century, and is one of those curious double churches—one church above another—of which the culminating example is the Sainte Chapelle of Paris. The original purpose of these double churches was probably to serve for monastic as well as

popular worship. An opening in the floor of the upper church allows of the service performed in the lower church to be heard and seen in both. The Gothic nave of S. Gereon at Cologne is of similar disposition.

The cathedral at Vesteras (Westeräs) is built of red brick and is

389—Lund, Sweden: north doorway of cathedral. See 388. (From Joseph.)

one of the very few buildings of Romanesque style in which that material is freely used.

CHAPTER VII

LATER ROMANESQUE: ARMENIA AND SOUTH-EASTERN EUROPE

RUSSIA and the neighbouring lands to the south can hardly be said to have evolved a distinctive style of architecture, except that of a primitive and semibarbaric kind, as exemplified in wooden houses and churches, and in rude stone towers such as are found in the Caucasus. The later and more sophisticated building, until modern times, has always been derived from, or greatly inspired by, the architecture of western Asia and the Levant; and local influences appear to have been so slight, at any time, that the style so transplanted suffered but little change from new environment.

During the later Middle Ages, there was developed in Armenia that modification of Byzantine,—or, more properly, Persian,—architecture which was to spread northerly to Russia and the neighbouring parts of Europe, contemporaneously with the western current which, passing through Constantinople, carried to western Europe that influence which created, with their many variations, the styles which are included in the general term Byzantine. (See Book VII.) The entire littoral of the Black Sea, and even the Danube districts, derived their styles of building mainly from Persia by way of the region of Trebizonde to the north; and even the earlier Romanesque of northwestern Europe—Scandinavia and the British Isles—came under the same influence, flowing across the continent from the Black Sea to the Baltic. The style of architecture developed in southeastern Europe, under this influence, although containing much that is Byzantine, has yet essential features to distinguish it from the architecture considered under that name in the earlier part of this volume.

Armenia, situated between the Greek Empire and Persia, had long been the scene of constant political disturbances and only at a late period was her tranquillity assured sufficiently for the proper de-

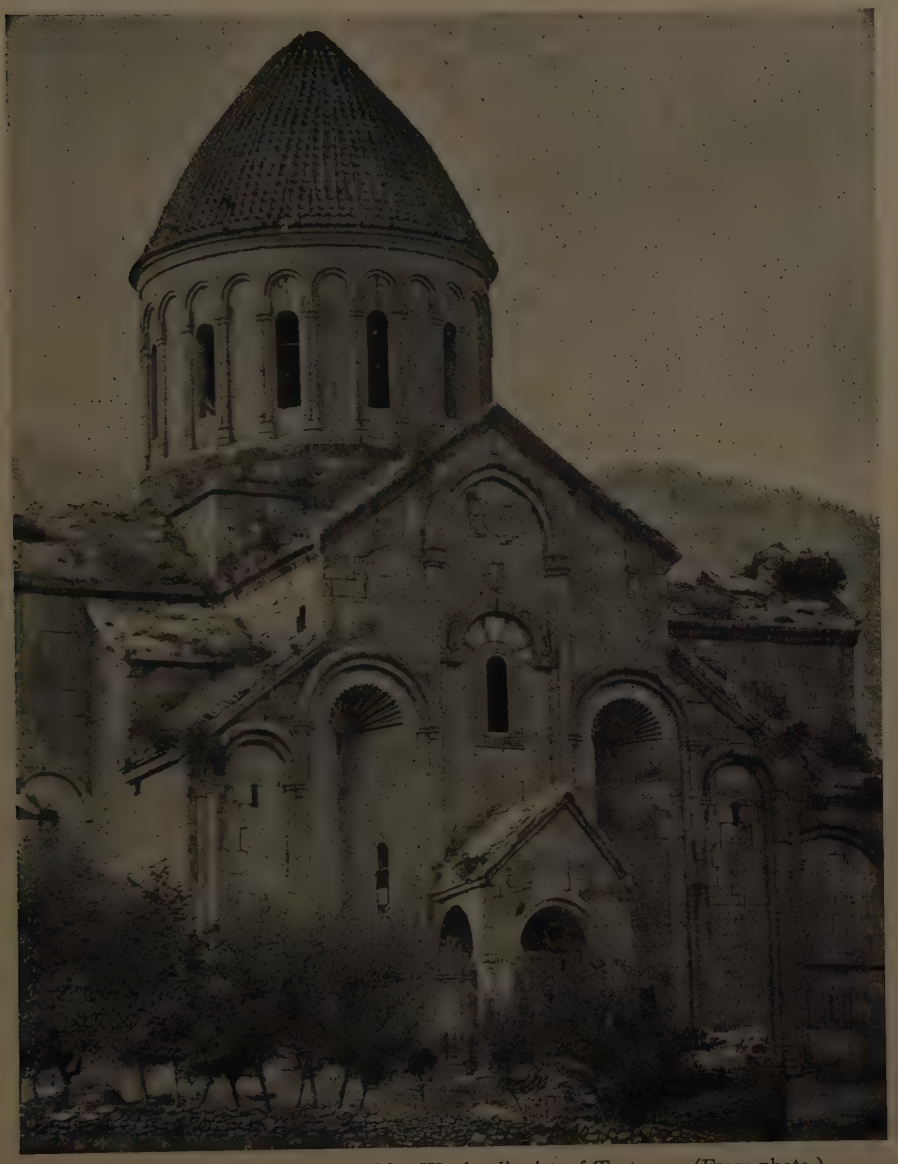
velopment of art of any sort; and even then for but a short time. Thus, it was not until about the opening of the eleventh century that there was the beginning of an architecture which we may call Armenian; and by the middle of the twelfth century it was already passing away. Yet during this short period the country was covered with edifices, which, although of strangely small dimensions, possess much refinement and beauty; and it was this architecture, as much as that of the Eastern Empire, which was adopted in south-eastern Europe from the Caucasus to the Balkans.

At the time that this architecture may be said to have a beginning, the Byzantine style was already in full flower in the adjoining territory;

390—Russia: Armenian architecture as exemplified at the monastery of Ghelatni, Trans-Caucasia. (From photo.)

offering, close at hand, an abundant source of inspiration. So it was from the Greek Empire that Armenia naturally borrowed the plan of her churches: its typical form was but a variant of the Byzantine plan of about the tenth century, although much simplified: a nearly perfect rectangle, its perimeter broken only by three small apses at the east end, and by whatever accessory, in the way of a porch, might be added to the main structure. The system of roofing, also, was of the simplest sort, consisting generally of pointed barrel-vaults disposed about

a cupola at the centre of the edifice, rising from a square of four arches which, with their supporting piers, give the semblance of a "crossing."



391.—Armenia: Church at Jeschke Wank, district of Tortum. (From photo.)

Thus the interior follows, in a primitive and unsophisticated way, the generally adopted plan of aisles and transept.

In the material employed, and in the resulting methods of construction, the builders of the Armenian school were driven to evolve

architectural forms which differed materially from the prevailing features of the Byzantine. In the countries which came to adopt this architecture stone was to be had in abundance, and was the natural building material, while brick was almost unknown; so that those forms of vaults and arches which were perfectly adapted to brick building were ill suited to the processes of stone masonry, erected without the use of centrings. To overcome the difficulties presented by this problem of turning an arch of stone, unsupported from below, it was essential to increase the rise in proportion to the span: hence we find the prevailing use of the pointed arch, and of domes of similar profile; these latter having outwardly very nearly the form of a cone rising from a high cylindrical drum. Below, the transition from the square to the circle was in general affected by the Byzantine method of pendentives of the form of spherical triangles. Outwardly, then the church presents a very simple mass of nearly uniform height except where the tall cupola rises at the centre.

Very good examples of the characteristic Armenian church are to be found at the monastery at Ghelatni, near Kutaïs in Trans-Caucasia, shown in Fig. 390, which gives the metropolitan church, at the centre, with two subordinate chapels. The photograph, taken from a point nearly opposite the north-east corner of the principal church, affords a very comprehensive view of the grouping of its several parts about the central cupola: the characteristic disposition following the lines of the plan described above. It will be observed that, immediately below the drum, the structure has the form of the Greek cross; the four arms covered with low-pitched gable roofs, accommodated to the form of the barrel-vaults beneath them, and abutting against the square enclosure of the crossing; but below this cruciform upper story the plan of the main building, except for the slight projection of three eastern apses, is a rectangle. The disposition of these apses, as three half-cylinders erected against the eastern end, is much like the arrangement common in the Byzantine plans, but may be thought less characte istic of the Armenian church than that shown in Fig. 391: the church at Jeschke Wank, near the north-eastern boundary of Asia Minor. Here the tri-apsidal group is expressed externally only by the two triangular niches which give to it a polygonal outline, conforming more or less closely to the circular recesses within. Except for this feature, the wall is uniform from the ground level up.

Neither of these churches has much in the way of adornment,

and they are interesting to the student chiefly as examples of a simple, rather rude and undeveloped architecture; the principal features of

392—Russia: Church a Pitoreti in the Caucasus. The sculpture is an elaborate example of Armenian decoration. (From photo.)

architectural interest being the cupolas with their supporting drums. Of the two examples, the second may be thought the more interesting

in point of decorative treatment, because of the greater boldness and variety of the projecting architraves and pilasters; but both are open to criticism for the extreme flatness and uniformity of the moulded members which are everywhere of nearly the same scale and of almost identical section. This, indeed, appears to have been the weak side of this architecture—apparent feebleness and lack of modelling in the ornament—and obtains even in the scroll-work and leafage, which, although Byzantine in general character, in no way deserves to rank with that beautiful sculpture, as illustrated elsewhere in this volume.

Thus, in the Caucasus are to be found interesting examples of a more elaborate decoration, probably inspired by the work of Byzantine artists, yet never equalling this in grace and freedom. The church at Pitoreti (Fig. 392) characteristically shows a wonderful profusion of sculptured detail, almost covering the building with a wealth of scroll-work and interlacing patterns. A close study of the view before us, which is of the west end, reveals an endless wealth of these complicated designs; one window alone displaying a dozen or more varieties, succeeding one another at short intervals. One cannot help being impressed with the fertile ingenuity of the artists by whom such a system of ornament was conceived; yet the result does not seem to be altogether satisfying. The effect is trivial—not dignified enough to suit a massive structure of cut-stone masonry: the ornament seems to be the work of a wood-carver; as minute in detail as if to be applied to a piece of furniture to be seen near at hand, and is but ill-suited to the place it occupies.

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